DOCUMENT RESUME

ED 120 846 CS 501 296

TITLE PEACESAT [Pan Pacific Education and Communication Experiments by Satellite] Project Networks: Using Satellite Communication Networks to Improve Social Conditions. Report 3.
INSTITUTION Hawaii Univ., Honolulu.
PUB DATE Nov 75
NOTE 79p.

EDRS PRICE MF-$0.83 HC-$4.67 Plus Postage
DESCRIPTORS Communication (Thought Transfer); *Communications; *Communication Satellites; Higher Education; *Information Networks; *Information Systems; Social Services; *Telecommunication
IDENTIFIERS *Project PEACESAT

ABSTRACT

The PEACESAT Project (Pan-Pacific Education and Communication Experiments by Satellite) is an international educational experiment involving institutions in 12 nations of the Pacific basin. Begun in 1969 and in full operation since 1971, the network is designed to increase interaction among societies and to bring about social development. This report describes the network-wide applications of PEACESAT. The network is designed for medical news, education, science, community, library, and national information exchange within the 12 nations participating in PEACESAT. The report concludes with a brief description of a PEACESAT users' conference and a chronology of the project. (RB)

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PEACESAT PROJECT

NETWORKS

Using Satellite Communication Networks To Improve Social Conditions

REPORT THREE

November 1975 • University of Hawaii
Honolulu, Hawaii

CS 501 296

PROJECT DESCRIPTION

The Pan Pacific Education and Communication Experiments by Satellite (PEACESAT) is an international educational experiment involving institutions in twelve nations of the Pacific Basin. All are linked by communication satellite for information sharing.

The purpose is to experiment with the application of communications technology and new methods of operation especially designed for health, education, and community services. Attention is focused on interaction among societies and requirements for social developments. The project began in 1969, and the experimental system has operated regularly since April 1971.

The PEACESAT system is a new arrangement of communications technology that is extremely flexible permitting conferencing among many locations over great distances. Needs are met and purposes served for which existing communication systems are not designed. The NASA ATS-1 satellite is a central relay point linking small ground terminals that are located as determined by the purposes and operations of the social services.

These terminals, which can be set up quickly, are designed for two-way communication. When associated with related equipment, communication may be by voice, teletype, wired blackboard, computer, and still pictures. TV motion pictures are not included because of the extremely high costs involved and the project emphasis on two-way communication from all locations.

The system users prepare all exchanges. There is no "software." Dialogue dominates. Local institutions arrange for capital and operating costs of the terminals, which are licensed by local national authorities.

We believe that the application of the satellite in this way to support social services has great potential internationally. It can provide immediate assistance to the less-developed areas of the world. At the same time, it can contribute world-wide to the advancement of science, the strengthening of culture, an increased flow of information, and more effective health, education, and community services.

Front Cover: University of Technology (Lae, Papua New Guinea) students test antenna for remote village portable satellite ground terminal. August 1975.
Back Cover: New Zealand elementary school students visit Wellington terminal for talks with Pacific counterparts. November 1973.

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Financial Support: The PEACESAT Project has been financed from the following sources: Department of Education, New Zealand; Carnegie Corporation of New York; Hawaii State Legislature; University of Hawaii; South Pacific Commission; Wellington Polytechnic Institute; MacKenzie Foundation (New Zealand); Papua New Guinea University of Technology; University of the South Pacific; Office of the High Commissioner, Trust Territory of the Pacific Islands Government; Scientific Research Division, Premier's Department, Cook Islands; Department of Education, Niue Island; National Broadcasting Commission, Papua New Guinea.

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1 INTRODUCTION

In the development of new functional communication systems for the social services, carefully organized networks play an important role. "Network" refers to an organized group of system users with a particular need for communication who set up a procedure for operation and prepare to use the satellite system to carry on communications. A network controller may be hired, and certain types of peripheral media equipment may be incorporated into the network design. A Pacific medical network, for example, would want to be able to exchange X-rays, EKGs, and legal papers, as well as use voice dialogue for medical consultations.

Communication networks are a common approach to functional communications in densely populated urban centers. There are already many kinds of networks today: air traffic, police, fire, and taxi, for example. The uniqueness of the PEACESAT Project is in networking over a very large geographical area among persons with different backgrounds. A variety of experimental network activities using the PEACESAT system have been undertaken including those on a global level (among specialists), on a regional level (for education and health services), and on a national level (with tests of a hypothetical remote area system for Papua New Guinea).

All of these networks are possible today because of the communication satellite and the low-cost, two-way ground terminal. In the PEACESAT concept, the communication satellite is designed to serve a wide area of the earth surface and to be compatible with small ground terminals. The PEACESAT Project provides a system using NASA's satellite ATS-1 and specially constructed small terminals.

The world badly needs communications systems suited to its low-income and low-density areas. Large areas of the world make very little use of existing commercial telecommunications as studies by the International Telecommunication Union and the Federal Communications Commission show. Levels of traffic in the larger part of the world cannot support the development of conventional communication systems using high-cost construction.

In our view, adequate education, health, and community development services require effective telecommunications to link remote locations to central services. The world's communication systems have grown up in response to defense and commercial requirements. We believe that new system approaches are essential for social development and the advancement of knowledge. The work of health, education, and community services should be supported by good communica-

tions at low cost in relation to social benefits. These communications systems should be designed for the social services and should not be a replication of systems designed for commercial or military purposes.

We have shown that a flexible system such as PEACESAT can work, yet it will require user networks, a substantial number of them, to sustain even a relatively low-cost system over a long period. It is the task of these networks to produce the social benefits to justify investment in communications services.

The PEACESAT experiment system is rudimentary, and it has led a precarious existence financially. But the pioneers who have used it indicate the need, and the modest system demonstrates the potential of the PEACESAT design to meet those needs. The system lacks the dramatic appeal of other high-cost educational satellite demonstrations and lacks the glamour of television entertainment or the potential for massive political conversions through television programs beamed to whole continents. The test of this system is in the work of social service that can be accomplished with it.

In this publication, Report 3, we have included excerpts from papers and PEACESAT proceedings that suggest future network applications. These tell of working experiences. They are not entertaining reading but, in each case, show a potential for social benefit in network utilization of the flexible PEACESAT system. Previous publications, Reports 1 and 2, cover the system design and early experiments.

John Bystrom
Project Director

"Let there flow from Hawaii, and from all of the states in our Union, to all peoples, east and west, a new spirit of interchange to build human brotherhood."

Gerald Ford
President
United States of America
Speech at Honolulu,
December 7, 1975,
transmitted via PEACESAT

2 MEDICAL NETWORK

There is little question that good medical communication would provide social benefits immediately. Better health care is a top priority for individuals and national leaders, particularly in developing areas. When population is sparse and scattered, as in the Pacific, it is necessary to consider whole regions as a medical service unit. Medical clinics and health centers have intercom systems to facilitate work, and the PEACESAT approach can perform the function of an intercom system covering the Pacific Basin.

A medical network can be envisaged linking health resources in the Pacific Basin: hospitals, clinics, research units, schools of health, medicine, and nursing, and other professional and paraprofessional education programs as well as the individual practitioners.

The network would provide 24-hour communication. Communication controllers at the major resource centers would switch inquiries to knowledge sources. Facsimile, teletype, and voice would be available. Computer accessing is practicable, and as computer use becomes a part of medical procedure, it could be integrated quickly into the system at relatively low cost. PEACESAT has contributed time to a variety of public health demonstrations in medical communication.

Under a contract with the National Library of Medicine, National Institutes of Health, a plan for a medical and health communication network was developed. Although this plan was initially intended for the U.S. Pacific, expansion to the Pacific Basin was advised since disease knows no boundaries. The Health net would include emergency traffic, epidemic control, consultations, and training.

In Reports 1 and 2, we have already described a number of medical activities. To indicate possible users, included here is a report on medical traffic over a 6-month period, description of a medical emergency, and a short excerpt from an epidemic control experiment.

EMERGENCY USE

The enormous capacity of the PEACESAT system as a medical emergency network to integrate available resources on short notice is illustrated in the unscheduled transmission described below. Medical personnel and the necessary equipment from obscure points separated by 3000 miles were brought together by satellite communications. The terminals referred to in Alaska were established in support of a project of the Department of Health, Education, and Welfare and are part of an Alaska public health communication network.

Scheduled use of the PEACESAT system was in progress when at 0230 GMT on October 18, 1972, the Anatuvak Pass satellite terminal (Alaska) requested a break in transmission for emergency medical consultation after unsuccessful attempts to contact the Tanana Hospital terminal (Alaska).

A young woman, Louisa Moria, was experiencing convulsions, hallucinations, and cramps in the arms and was suffering from extreme pain. Carol Misko, University of Hawaii Terminal Manager, telephoned the Straub Clinic in Honolulu for assistance. Dr. Thomas Owen on duty there was linked by phone patch to the University terminal, and his words were sent by satellite to the terminal at Anatuvak Pass. The medical condition of the patient was described, enabling Dr. Owen to recommend emergency procedures until local medical assistance became available. At the University of Hawaii, James McMahon, PEACESAT System Coordinator, contacted the CINC-AL Command Center in Alaska by telephoning Major Takeguchi, CINCPAC Command Center, Hawaii. McMahon requested that CINC-AL contact Tanana Hospital and inform them that their transceiver was off. He suggested that aircraft be made available to evacuate the patient from Anatuvak Pass and that the doctor enroute to Anatuvak Pass be alerted to the possibility of treatment for hyperventilation and grand mal seizures. The request was refferred by CINC-AL to the Alaska Joint Military Rescue Center, where the information was repeated and finally relayed to Tanana Hospital.

When the transceiver at Tanana Hospital was turned on, communication with Tanana physician Dr. Crook was established through the satellite terminal at Anatuvak Pass. Information provided by the patient's husband and other village people was insufficient for diagnosis. A recording of the earlier conversation between Dr. Owen and Anatuvak Pass was played back by the University of Hawaii terminal to assist in providing needed information. Based on this, Dr. Crook prescribed an injection of phenobarbitol to control the seizures. However, the medication available was in the form of tablets, and probability of unconsciousness during the seizures pre-

cluded their use. Consequently, it was necessary to contain the patient during the seizures to avoid injury and to maintain an all-night watch for changes in condition.

Because of severe weather conditions, a small aircraft was unable to evacuate the patient. College Station terminal (Alaska) came on to report plans to contact the Joint Military Rescue Center for a military emergency airlift. University of Hawaii terminal went off the air at 0445 GMT assured that the necessary communication links in Alaska were restored.

PILOT ACTIVITIES IN HEALTH AND MEDICAL COMMUNICATION

January - June 1972

Medical and health communication pilot demonstration activities are reviewed in this report for a 6-month period, January to June 1972. The experience allowed in the time period is limited; however, the review is helpful in projecting potential benefits from the availability of good, long-distance communication in the great ocean areas of the U.S. Pacific.

Pacific Research Section (NIH)

Since January 1972, 1 hour per week PEACESAT time has been utilized at the University of Hawaii, Manoa Terminal, by Dr. Leon Rosen, Head of the Pacific Research Section (Honolulu, Hawaii) of the National Institutes of Health. The satellite ground terminal located at the National Library of Medicine (Bethesda, Maryland) is cooperating. Satellite transmissions are used for research and administrative planning with the following locations involved:

1. NIH headquarters, Bethesda, Maryland
2. National Library of Medicine, Bethesda, Maryland
3. Colonial War Memorial Hospital, Virus Research Laboratory, Suva, Fiji
4. LBJ Medical Center, American Samoa

Topics discussed during the NIH exchanges included dengue fever research; equipment purchasing; shipment of supplies; research samples; transportation requirements; specialist availability; research proposals; hepatitis; and training of personnel.

Dr. Rosen reported that satellite communication provided great savings in professional time by replacing the need for travel. Planes are not on a daily schedule to many South Pacific locations; time-consuming surface travel is often required. Two-way conversations have been particularly useful in following an epidemic of dengue fever moving through the South Pacific area.

American Samoa

In March 1973, Dr. Peter F. Beales, Director of Medical Services, proposed regular use of the PEACESAT system by medical services to Dr. John Bystrom. Dr. Beales stated that current commercial telephone services between American Samoa and Honolulu were not sufficiently reliable for health-care requirements. He related a number of experiences in which vital medical data concerning Samoan patients under care in Honolulu had been garbled or incomplete when sent by telephone.

A period from 9:00 to 10:00 a.m. Honolulu time (8:00 to 9:00 a.m. American Samoan time) on Tuesday was set aside on PEACESAT for American Samoa medical transmissions. PEACESAT completed arrangements in Honolulu with Leahi Hospital, Shriner's Hospital for Crippled Children, Tripler Army Hospital, and Straub Clinic for consultation via phone patch during the 1-hour period. Transmission began in April, 1973.

American Samoa has close ties with Hawaii clinics and hospitals; pathology and surgical cases are referred regularly to Honolulu. Topics discussed during PEACESAT medical communications between American Samoa and Hawaii include travel plans for medical specialists; tumor board consulting; blood gas machine and training; report on breast carcinoma; tuberculosis case referral; open heart surgery on small children; training of American Samoa student by Honolulu pathologist; nursing seminar preparations; training of local specialists by nonlocal personnel; and parental consent for surgery on American Samoa patients in Honolulu.

Ronald Norby, then Director of Continuing Nursing Education, and Lida Chase, Professor of Nursing, University of Hawaii, plan with counterparts in American Samoa the training sessions on cross-cultural approaches for nurse-patient interview techniques. March 1973.

Cultural influences on childbirth and child-rearing practices were topics for an international nursing seminar involving seven Pacific Basin nations. Ann Clark (at microphone), then Professor of Maternal and Child Nursing at the University of Hawaii. May 1973.

Trust Territory Department of Health Services

An excellent demonstration of the potential of tne system occurred at the time of the initial checkout on April 16, 1973. Without prearrangement, Dr. Masao Kumangai, Director of Health Services, asked to confer with Dr. Richard Seamen, Head of the ear-nose-throat unit at Tripler Army Hospital in Honolulu. Dr. Seamen was reached by telephone and in 3 minutes was conferring from his home with Dr. Kumangai about an audiology training program for Ponape Island in the Carolines. The series of health exchanges that followed the initial demonstration were interrupted when it was necessary for Dr. Kumangai to go into mourning on the death of his father. However, five exchanges were held between the Trust Territory and Honolulu medical receivers.

Topics discussed have included an audiology training program; purchase of audiometers; skin testing for a Truk patient; an antigen request to Atlanta, Georgia; and the treatment of a leukemia patient.

Operation of the terminal has been excellent in all respects. The fidelity of transmission has been appraised repeatedly by those of the Trust Territory as superior to alternative services.

The incorporation of the phone patch--and the involvement of the local common carrier system--is important to effective medical application. The phone patch is a very desirable feature for the system. Thus far the satellite link has provided fidelity and reliability that exceeds previously used long-distance transmission services.

Nursing Exchanges

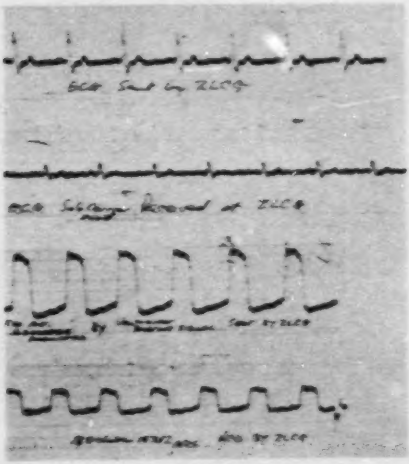
Use of the system to achieve nursing education objectives in the Pacific area was discussed with the University of Hawaii School of Nursing and Mr. Ronald Norby, Director of Continuing Nursing Education, University of Hawaii, beginning in March 1973. Two pilot activities were formulated and undertaken. They illustrate what can be accomplished on a broad front.

The first pilot activity was designed:

1. to explore the effectiveness of the PEACESAT system when used in conjunction with mailed videotaped instructional materials;
2. to explore the effectiveness of PEACESAT exchange for instruction in a cross-cultural setting;
3. to study cross-cultural similarities and differences in nurse-patient interview techniques.

Prior to the exchange, a videotape on nurse-patient interaction was prepared at the University of Hawaii by three graduate student nurses and Ronald Norby, Director of Continuing Nursing Education, and the videotape was mailed to American Samoa. It was designed to assist nurses in establishing an effective relationship for gathering information about the patient. American Samoa nurses viewed and discussed the videotape twice before the exchange.

An evaluation questionnaire, prepared jointly by PEACESAT and School of Nursing personnel, was administered by participants



EKGs sent by facsimile are satisfactory for preliminary diagnostic purposes. October 1972.

Treatment is administered by a public health nurse at the University of Technology Clinic, Papua New Guinea. April 1973.

at the conclusion of the exchange. In the opinion of the small groups of participants:

1. Joint conferences on nursing education via PEACESAT are desirable.
2. The PEACESAT system was effective as an instruction medium.
3. Two-way communication is useful when used in support of videotaped instruction.

The second pilot demonstration activity involved eight terminals--Pago Pago, American Samoa; Lae, Papua New Guinea; Saipan, Trust Territory; Suva, Fiji; Wellington, New Zealand; University of Hawaii, Honolulu and Hilo campuses. It was designed:

1. to explore PEACESAT effectiveness when used in conjunction with previously mailed printed reports;
2. to develop awareness of cultural influences on health during pregnancy and early childhood;
3. to obtain knowledge of cultural similarities and differences in caring for patients from multiethnic populations;
4. to determine if nurses with differing cultural background will report satisfaction with a training experience in which PEACESAT is used. The health and medical professionals at each location were from diverse cultures with experience in the health care of multiethnic populations.

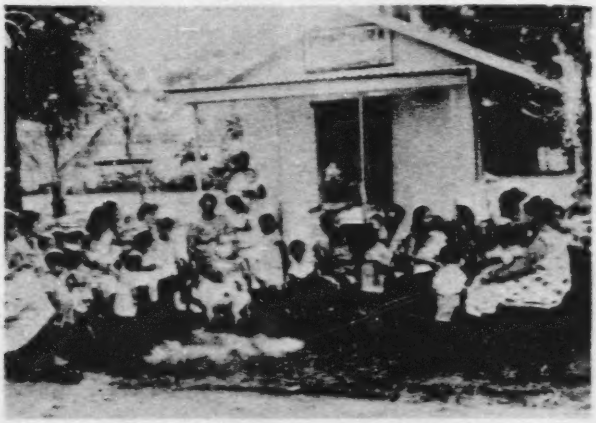
Two papers were prepared by the University of Hawaii School of Nursing personnel and distributed to all locations.

A 30-minute preplanning exchange on PEACESAT was held on May 24, 1973. Participants became acquainted and described their interests in the two topics. The Wellington, New Zealand, group sent a facsimile to all terminals with questions to be answered during the major exchange.

On May 31, the first 45 minutes of the exchange focused on the first paper, and the second paper occupied the remaining 40 minutes. Differing cultural practices were discussed. For example, the Chief of Nursing, Trust Territory, described the practice of the "maternal hut," constructed by the family for the pregnant woman, in which the birth of the baby is conducted in secrecy.

An evaluation questionnaire was administered. Opinions drawn from the necessarily limited response include the following:

1. Knowledge and awareness of cultural influences on childbearing and rearing was transferred. (Instructor Dyanna Affonso stated, "The sharing of the experiences was valuable because such data is not available through other media.")
2. Future international nursing sessions are desirable.
3. The number of terminals interconnected affects the amount and type of questions asked by participants. (The Manoa group felt that five terminals in participation should be the maximum for a 90-minute time period.)
4. A preplanning exchange is useful in multi-terminal instructional exchanges. Participants



Public health nurses staff the Infant Welfare Clinic at Rarotonga, Cook Islands, June 1973.

communicate more freely after rapport has been developed.

5. Controlled time (with each terminal speaking for 5 minutes on a particular question) is an effective method for managing communication flow during multiterminal interconnections.

International Networking

International networking here refers to those medical and health exchanges initiated by ground terminals outside the United States. These medical exchanges are not regular in their occurrence and represent use largely for administrative planning and research purposes. Emerging relationships among the various Pacific Basin medical and health agencies will continue to be strengthened as the pilot demonstration progresses into the second-year activities. Medical personnel from the Wellington Hospital, for example, have expressed interest in use of the system in the consulting and research areas as well as medical telemetry application.

Review of Traffic

The 6-month period of pilot operation between Hawaii, American Samoa, and the Trust Territory, although brief, has permitted exploratory study of data collection procedures and some trials aimed at determining effective approaches to evaluation.

Planning with medical and health personnel from a number of Pacific locations resulted in the selection of seven major categories of medical and health communication. Examples are shown in each instance.

1. Administrative Planning: the transportation needs of a physician to a Pacific location; equipment shipping; preliminary planning for future seminar activities.
2. Diagnostic Consulting: leukemia treatment process; skin testing procedure.
3. Medical Library Information: a search request for medical or health literature reference; follow-up on a shipment to a Pacific location.
4. Public Information Broadcasting: a brief talk on nutrition and health, which may be taped for future public dissemination.
5. Research: an antibody technique for detection of mosquito infection; dengue fever laboratory report; report on breast carcinoma study.
6. Training and Instruction: description of the process for operating a blood gas machine.
7. Other: arrangements for phone patching, etc.

DENGUE FEVER CONTROL

The sometimes fatal dengue virus, which has been spreading rapidly throughout much of the South Pacific region, has been the subject of numerous satellite exchanges. The transcribed excerpt that follows is from conferences held as needed over a four year period, sometimes several meetings a week. Speaking are Dr. Duane Reed, South Pacific Commission (New Caledonia), Dr. Leon Rosen, Pacific Research Section (Hawaii), and Dr. Terry McGuire (New Zealand).

PEACESAT Transmission
July 1975

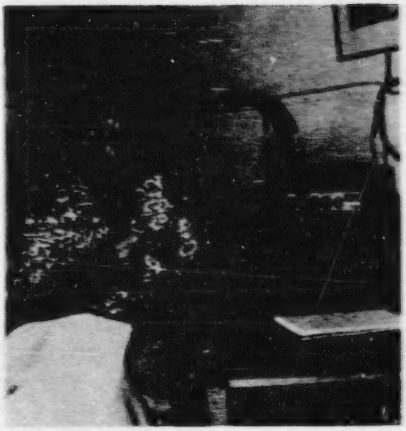
Rosen: Well, the major news that I have is that there's quite a bit of activity going on in American Samoa. I haven't actually had any communications from them. But I've been getting lots of paired serum and rises, which look like probably Type I in there. And like I say, I have no direct information at all. However, the fact that a lot of the sera they are sending suggests having quite a few cases.

I've also received something from CDC (Center for Disease Control) in which, apparently, some American, having come from the Peace Corp in Tonga and transited American Samoa, has come down with Dengue in Utah. So, I would say that major news that I have is that, apparently, there's quite a bit of activity in American Samoa. I don't know if you know it or not, but we did isolate a Type I strain from Niue. Back to the net ...

Reed: OK, Leon. Well, that fits in with what I learned from Terry McGuire (New Zealand). He has received at least two batches of paired sera from Western Samoa and detected titer rises in both these batches. I think they include at least 15 cases which occurred; I guess it was late June or early July. We should get the details from him.

So it sounds like this epidemic, which is continuing to move across the Pacific, is now showing up in the Samoas. So that when we were there in Apia in July, there were plenty of Aedes Aegypti around; so we might expect a big epidemic there. I was wondering, Leon what's happening in Tahiti? Have you heard anything else from there? Over ...

Rosen: Well, yes, we're in continuous contact with them. They send specimens up about every two weeks and we have one or so



South Pacific Commission epidemiologist Duane Reed during dengue research discussion, June 1975.

more Type I strains. Most of them are Type II. There's still, as far as I know, no large epidemic outburst. It seems to be going along at an endemic level, with most of the people affected being newly arrived Europeans. Back to Noumea ...

Reed: OK, Leon. Well there's nothing been going on here in New Caledonia and it seems like the epidemic in New Hebrides is slowed. They're not reporting any activity. We have nothing else coming from this end of the Pacific in New Guinea and in the Solomon Islands. The score to date will be put out probably toward the end or the first part of next week, and volume III of Dengue News will be coming out summarizing what's been going on during the past six months.

Leon, I'll check with you once more if you have any other news and then we'll move on and see if we can pick up Terry down in Dunedin. Back to Honolulu ...

Rosen: I have one question Duane. I've been quite curious as to what's happening in Niue. We have received quite a few paired sera via Fiji and I think we've only had one or two rises, one of which we got a virus out of and I don't know whether this was a newly arrived person or not. Perhaps you could comment on what you know, if anything, about Niue, and also I take it that there's no activity to speak of in New Caledonia. ...

Reed: OK, first about Niue, no information. There were a few officially reported cases back in May and June--I think less than 5 or 6 offhand. We haven't heard anything else. Niue is standing by; perhaps we can check with them later about that.

There have been no other cases here in New Caledonia; I'm not even certain if there were any cases in the first place except for one gentleman who came from Fiji. The other cases were diagnosed only on the basis of convalescence serum and not on titer rises. Anyway there has been no activity here. ...

Well, let's move on to New Zealand and see if Terry McGuire is on there. Over to New Zealand ...

McGuire: Hello. This is Terry McGuire in Dunedin. I'll report on a few collections from Western Samoa. There are about 17 pairs and I think 4 or 5--I don't have the records in front of me--but 4 or 5 of these are showing definite four-fold or more dengue antibody rises.

From the few we've had from the Solomons, we've had 5 or 6 pairs and about 5 or 6 singles here from cases in the Solomons; none are showing dengue and we've tried isolation from these, again without success.

We've had your tests run on the serum we took from you yourself when you were here. You'll be glad to know you're still a four star dengue, Duane, although you've got no dengue antibodies yourself, as far as we can tell. ...

EXCHANGES IN MEDICINE AND HEALTH

Dengue Virus Epidemic Research & Control · Medical Research in the Pacific · Telemetry EKG Experimentation · National Institute of Health Research · Diagnostic Consulting · Dental Hygiene · Neurosurgery · Ciguatera Poisoning · Epidemiology of Diseases · Public Health Laboratories · Rheumatic Heart Disease · Hypertension · Nutrition of Children · Alcohol & Drug Abuse · Problems of Adolescence · American Cancer Society · Medical Emergencies · Public Health Inspector Training · Red Cross Societies · Diet & Dental Health · Tooth-Brushing · Head Injuries · Practical Use of Fluorides · Metabolic Diseases · Dental · Use of Composite Resins · Pediatric Gastro Enteritis · Liptospirosis · Taxoplasmosis · Tuberculosis · Family Planning · Obstetric Problems

3 NEWS NETWORK

In the first proposals for the PEACESAT experiment, it was argued that community development could be encouraged by multi-lateral news exchange within regions. Two-way exchange among reporters is a method natural to the PEACESAT conferencing system. News is exchanged among reporters, each in a different country. A reporter presenting news is placed on the spot usually reserved for political figures and must immediately respond to questions from other locations.

Regional networks are easily assembled via PEACESAT. In the process, geographical and social areas currently outside world news-gathering operations may be included without great difficulty. By recording or listening in on the exchanges, the major news services can at little cost receive news, at times very important news, from remote areas.

Experiments in two-way conference communication among news reporters has raised serious questions for the nations involved. Are the newspaper's news sources outside the country best limited to the international wire services and to the shortwave news broadcasts of the major powers? Will nations allow news of events within the country to be transmitted outside the country? Can the PEACESAT Project, which focuses on experiments in health, education, and community development, properly become involved in news exchange experiments?

In international circles, the transmission of TV news (usually one-way) is often discussed. The high cost of television is shown by the commercial rate structure. Television transmitted one-way by satellite from Honolulu to Los Angeles, about 2000 miles, costs $3000 for one hour. Two-way television doubles cost. In contrast, a two-way channel for voice, teletype, computers or other media costs about $65 for one hour. There is greater disparity in the comparative costs of preparing the program messages. Can social benefits justify the increased cost of television?

EXPERIMENT IN NEWS AND INFORMATION EXCHANGE BY SATELLITE

Ian Johnstone
Broadcast Officer
South Pacific Commission

In the Pacific Basin as elsewhere in the world, the absence of good regional communications is a barrier to social and economic development. Because remote locations receive news prepared by the news services of the major powers, which are often unrelated to island life, these nations lack information about neighbors in the region. It is also true that news occurring in their own areas often go undistributed by the international news services since channels to them from sources in the region are almost nonexistent.

Under the direction of Ian Johnstone, then Broadcast Officer for the South Pacific Commission, an experiment was devised to permit island nations to exchange news on a weekly basis. Built into the experiment that began in June 1974 was the ability for each participating reporter to directly question the reporters who were originating news from other locations. Direct international conference interviewing is not found anywhere else, as far as we know. It is possible with the PEACESAT system because of its two-way conferencing characteristics.

News were limited to items of local or regional interest. The news network involved participants from New Zealand, Papua New Guinea, Trust Territory of the Pacific Islands, New Caledonia, Cook Islands, Niue Island, and New Hebrides Islands. A second phase of the experiment still in progress began in February 1975.

An experiment was begun to allow countries in and around the South Pacific Commission area to try to exchange news and information on a cooperative basis, using 1 hour a week of ATS-1 time allocated by the University of the South Pacific, as part of its normal schedule. It was hoped that the experiment would help to:

1. identify present and probably future patterns of need for news and information exchange in the region;
2. provide data on the capabilities of various communication media, and the ways in which they may complement each other;
3. provide training opportunities for media personnel.

Form and System of Exchange

Because many participants in the experiment were small Departments of Information or Broadcasting with limited staff numbers, the form of exchange contributions was kept as simple as possible. Participants were asked to provide a weekly 3-to-4-minute voice bulletin of local news of regional interest. Each participant could record all contributions and thus have a number of bulletins of news about South Pacific countries for use in national newspapers, newscasts, and school publications. Content of bulletins was governed by the "Suggestions for Content of Programming on PEACESAT," drawn up by Dr. John Bystrom; these suggestions were found completely satisfactory and were never questioned by any participant throughout the experiment.

Here are some informal observations about the experience gained in bulletin compilation and presentation:

1. Some of the smaller countries participating found some difficulty in classifying material of regional interest. In the first few exchanges, bulletin content tended toward the parochial, on occasions, but it was noticeable that stories gained a more regional character as the experiment progressed, and news editors and reporters were able to learn from the exchanges the news areas that were of interest to their neighbors. This whole editorial area is worthy of further study and is proposed for inclusion by discussion sessions in the experiment contemplated for 1975.

2. Voiced inserts were tried on occasions. These added to the interest of the bulletins but were sometimes difficult to replay or transcribe clearly. However, much was learned about the clarity, pace, and content needed to make inserts suitable for inclusion.

Brian Chitty, reporter, reads news from the Cook Islands. Stuart Kingan, Rarotonga Terminal Manager (foreground). June 1974.

NIUE

Niue stated they are having trouble transmitting news because of N.Z. Postal Regulations. We hope to hear from them next week.

COOK ISLANDS

Reported from Rarotonga: Preparations for September's S.P.C. Conference; 150 Years of Christianity in Mangaia; New Land-use Map for Rarotonga; Cook Islands Culture Revived.

FIJI & NOUMEA

NO REPORT THIS WEEK

PAPUA NEW GUINEA

TO CURB INFLATION

The Papua New Guinea Government has stepped up its fight against inflation. In the last anti-inflationary measures the government is to lower freight charges on basic food items shipped between Papua New Guinea ports. Freight rates on flour, sugar, rice, tinned meat and fish and wheatmeal will be dropped by 10%. Other recent measures have been the reduction of profit margins, the enlargement of the number of items under price control and the enforcement of advance notification of price increases. The 2½% import levy has also been dropped from basic food items.
There have been angry demonstrations against rising prices in the territory.

NEW INCOME - POACHERS

Another Taiwan fishing vessel has been arrested off the Southern tip of Papua. The 16 members of its crew will be charged with poaching in Papua New Guinea waters. This is the 5th seized in the area this year. The Government recently found a new source of income from poachers. It sold back to the offending country one of the confiscated vessels.

WAR DEAD EXHUMED

The remains of 250 Japanese war dead were recovered recently from the ever-grown battle fields of New Guinea and were cremated this week in the presence of a Japanese team who had been sent by that Government to conduct the search of the battle fields.

HAWAII

FURTHER INROAD OF KARATE?

At the beginning of a tour of Americans cities the Hoosho troop from Mainland China are at present performing in Honolulu. They show the traditional martial arts and demonstrate boxing, and the manipulation of spears cudgels and whips with acrobatic skill.

IN - MIGRATION

Research in Hawaii indicates that in-migration rather than birthrate will dominate the population growth of that territory in the future.

ONE BILLION COMPENSATION

The Aloha Association of Hawaii has sent representatives to Washington in an effort to get the U.S. Congress to pass legislation which would re-imburse native Hawaiians for land taken by the Government over 80 years ago when Hawaii first became a U.S. Territory. They are asking for compensation of 1 billion dollars which they intend to be used to benefit native Hawaiian people. Similar claims have been made by native American Indians and Native Alaskans recently.

EAST WEST CENTRE

Dr. Brian Lockwood has been appointed staff member at the East West Food Institute. He will work as a Research Associate. At present Senior Lecturer in Economics at the School of Social and Economic Development at U.S.P., he has studied problems of the importation of frozen beef from N.Z. into Hawaii and has also worked with the International Rights Research Institute in the Philippines.

U.S. TRUST TERRITORIES

U.N.D.P. TO MICRONESIA

Micronesia recently became a member of the United Nations Development Programme. They hope to begin to receive assistance within a year.
They intend to request aid in establishing a Micronesian Economic Development Programme. Further aid is hoped for in Fishery programmes and in Planning and Building of low cost Micronesian homes. It is suggested that this step may be seen as an indication of the territory's willingness to become involved in Regional and International programmes.

PORT BID FAILS

A bid to become a Port of Registry for Ships has been rejected by U.S. Interior Secretary, Roger C.B. Morton. He stated that the bill was not fully consistent with the obligations of the United States under International Conventions relating to shipping.

INVESTMENT OPPORTUNITIES

New regulations which become effective from April 1st, 1974 allow foreign companies to invest in Micronesia. Some firms have already applied for Trust Territory Foreign Investment Permits and they include: a coconut processing company, 4 construction companies, 2 public accounting firms, a Bank, a real estate company, a loss adjuster and a printing firm. The applicants include: an Englishman, 4 American Corporations, 2 Korean Companies, a Japanese Banking firm, a Panamanian Corporation and a Philippine firm. Applicants must indicate the area in which they wish to set up business, what benefits the Territory will receive and whether they intend to replace existing concerns. District Level Public Hearings will be held to get public reaction to each proposed venture.

BATTLE FOR AIR ROUTES

Saipan reports that the Governments of Fiji and the United States have been unable to agree on an exchange of Pacific Air Routes, although the negotiators, meeting in Honolulu last month, agreed upon the text of an Air Transportation Pact.
Fiji offered routes through Nadi in return for services throughout Micronesia and to Tahiti by way of Pago Pago. Fiji's AIR PACIFIC has sought permission for services to Majuro in the Marshall Islands and other points in Micronesia in the past. AIR MICRONESIA has been given permission to fly from Majuro to Pago Pago through Tarawa and Funafuti, but is not yet operating on that route.

BILINGUAL EDUCATION

A special consultant from S.P.C. will arrive in Micronesia this week. Dr. George Pittman will conduct a workshop on Bilingual Education in the Truk District. He is known throughout the Pacific as an excellent authority on the Teaching of English as a Second Language. Miss Betsy Lane of the University of Hawaii will lead a similar workshop in the Yap district.

3. Some contributors had difficulty subediting or re-writing their bulletins so that references, proper names, and so on that were perfectly understandable to their home audience were also made clear to the regional audience. Ideally, all bulletins should have been rewritten for regional use before the exchange, but this was not always possible, given the small and relatively inexperienced staffs in some places. This is another area of expertise that should be further explored during 1975.

4. Most contributors found it best to use professional broadcaster readers when possible. Although there is no final information on the question, it is suspected that "live" reading of the bulletins was more satisfactory than prerecorded material. This may change as facilities at satellite terminals become more sophisticated.

Reception and Participants

The experiment was, of course, subject to normal reception conditions affecting ATS-1. From information received so far from participants, it appears that bulletins--or parts of them--were only rarely (e.g., to evidence the start of the experiment) used for rebroadcast by participating broadcast stations. Most participants preferred to transcribe and voice or print material as necessary.

Regular participants in the experiment were:

Suva--Fiji Broadcasting Commission
Honolulu--KHVH Radio
Lae--National Broadcasting Commission of Papua New Guinea
Niue--Information Officer, Government of Niue
Nuku'alofa--Tonga Broadcasting Commission
Rarotonga--Curriculum Development Unit, Department of Education
Saipan--Micronesia Broadcasting Service
Wellington--New Zealand Broadcasting Commission.

Occasional participants were:

Noumea--S.P.C. Headquarters
Suva--Fiji Times
Vila--Information Service, British Residency
Honiara--S.I. Information and Broadcasting Service.

Note: Vila, and, for the greater part of the experiment, Honiara, did not have direct access to the satellite network, but participated by contributing occasional taped voice bulletins and by receiving transcripts of the other contributions from this office.

The South Pacific Commission is an international development organization established after World War II to improve health conditions and promote social and economic development in the Pacific region. The SPC specialists travel throughout the Pacific assisting developing projects, carrying out training activities, and advising government agencies. Frank Mahony, Social Program Director, initiated activation of the experimental terminal at Noumea and SPC involvement in the PEACESAT Project. July 26, 1974.

Uses for News Received Via the Exchange

There is still no comprehensive data available on use, but the statements received can be summarized:

Rarotonga--Almost every exchange was fully transcribed and printed in "Pacific Roundup," a weekly publication for schools and the general public.
Lae--Occasional items were used in NBC Papua New Guinea newscasts.
Fiji--Very occasional items were used in Radio Fiji and the Fiji Times News.
Wellington--Occasional items were used in NZBC News. Items were used more frequently as background for research and so on.

Information supplied orally during a satellite discussion among other participants can be summarized thus:

Hawaii--Considerable use was made of bulletins. There is interest in further experiment.
Saipan--Regular use was made of items. There is keen interest in a further experiment.
Tonga--Regular use was made of items.
Noumea--Some items were found somewhat parochial. There is little contact with local news media.
Niue--Regular use was made of items received, but preparation of Niue bulletins became a considerable strain on local resources.

Two further points should be made:

1. Some two-thirds of the way through the experiment, the exchange had to be shifted from a Fiji Wednesday to a Fiji Monday time slot. This disrupted arrangements already made and meant that countries east of the International Dateline had to operate the

exchange on a Sunday, so causing roster and assembly problems. All participants found a mid-week time slo most suitable and urged that any future experiment be allocated such a time and maintain it.

2. All participants commented that they found the exchan valuable in ways other than simply making news items available for local publication. The exchange offere opportunities for:

    1. checking local news content against that being published in other countries;
    2. developing themes for local investigation and comment;
    3. checking the accuracy of items received from other sources;
    4. familiarizing new staff with overseas approaches;
    5. suggesting topics and stories for local follow-up;
    6. training staff in preparation of news for other audiences.

Special Applications

As had been originally intended, the experiment also explored other news applications on four occasions. During the Rarotonga meetings of the South Pacific Forum and the South Pacific Conference, the time allocated (plus periods made specially available) was used for transmission of news and comments on the proceedings of these meetings of vital regional significance. These exchanges were extremely well received by most participants, since they offered "closer" and more immediate reports than were available by any other system. Of particular interest were reports made in vernacular languages for home audiences. Also, the exchange was used on two occasions to explore question-and-answer sessions with regional personalities. Sir Albert Henry, Premier of the Cook Islands, answered questions from journalists on his return from the UN Law of the Sea Conference in Caracuas, and the retiring Resident Commissioner in Niue answered questions about the country's self-government immediately following the celebrations of that event on Niue. Applications such as these are well worth further exploration.

Conclusions

Although final reports on this first Regional News and Information Exchange experiment by satellite are not yet possible, it is apparent from participants' reactions thus far that the satellite offers an incomparable system for regional news exchange and that even the limited exchanges possible through the first experiment went a considerable way toward reducing the prevailing ignorance about events in neighbor countries within the region.

4 EDUCATION NETWORK

Networks can assist educational institutions to carry on work, promote sharing of resources, and improve instruction or make it available where it is otherwise unavailable. Ad hoc networks, for instance, can be set up rapidly to carry out research and collect data in remote areas. Then, once telecommunication links are available, elementary schools, high schools, and community colleges can join in network relationships. Advance planning and commitments will be needed to assure that the projected benefits of networking are commensurate with added costs. When television programs are not used, the added operating costs can be very low. Requirements, in addition to communication capacity, may be no more than a network administrator, often part time.

Within a year after it had become actively involved in the PEACESAT Project, the University of the South Pacific was planning a network to link extension centres being established in a number of South Pacific island nations with the main campus of the University at Suva, Fiji. Sections of the first report to the Carnegie Corporation of New York on the USP Regional Education Network Project are included here.

Other projects have been proposed, among them a New Zealand Continuing Medical Education Network. Community colleges are developing in the Pacific and a network experiment is being discussed. A successful 2-year experiment in joint teaching and administration of course work, involving the students and staffs of three Universities in three nations, points to the feasibility and desirability of an international, higher-education net.

REPORT FOR THE FIRST EXPERIMENTAL YEAR: USP SATELLITE COMMUNICATION PROJECT

Gilda Benstead, Terminal Manager
Dick Northcott, Technical Consultant
Peter McMechan, Asst. Dir. Extension Services
University of the South Pacific
Suva, Fiji

The University of the South Pacific Regional Education Network began activities in July 1973. The Network's primary function is the extension of university resources via satellite to University centres remote from the main Suva, Fiji campus.

Among the current instructional activities, two courses, one in Consumer Education and another in Home Economics, are being offered via satellite to centres in Niue, Rarotonga, Honiara, Tarawa, and Tonga. In addition to lectures, seminars, and tutorials, the satellite links are used in matters concerning staff relationships among the University centres. Weekly staff conferences are held during which educational topics such as correspondence mailings, grading and evaluation procedures, and community-interest courses are discussed.

The report that follows reviews the experimental activities of the first phase (August 1973 to December 1974) of the Regional Network.

The Experimental Proposal

The experiment was based upon a proposal for an experiment in educational communications submitted to the United States National Aeronautics and Space Administration by the University of the South Pacific, July 1973.

This document proposed three goals:

1. to determine the applicability of two-way voice or data communication to the Extension Services program of the University of the South Pacific;

2. to identify effective uses of such a link--such as lectures, seminars, tutorials, library transfers--as enrichment to the program;

3. to estimate time requirements during a school year for each communication use and to compare cost and effectiveness of a satellite link with other forms of communication.

In order to achieve the three goals set out above, the University of the South Pacific proposed to set up a network of ground stations, each capable of transmitting and receiving radio signals to and from the VHF transponder of the NASA satellite ATS-1. During the period August 1973 through December 1974, a series of experiments were to be carried out, and the University requested NASA to make the transponder available at suitable times.

Funding for the project was sought from two sources. The major source was the Carnegie Corporation of New York, who had provided the initial funding, which had enabled the University to enter the PEACESAT Project in 1971, and had continued funding its efforts thereafter. They were joined for the 1974 proposal period by UNDP/UNESCO, who offered support to enable four of the ten terminals to be established.

Constraints

The continued support of the Carnegie Corporation of New York has allowed the University considerable flexibility in pursuing the experimental objectives of the project. However, a severe difficulty for a successful experiment has been encountered in that outside funding (such as that of the Carnegie Corporation) is necessary because of the low level of local resources available to the University in general. Approval for continuation of the project is offered by NASA on a short-term basis, therefore, aid funding must be sought on a similar short-term basis. The relatively low level of available local technical expertise--both on the electronic side of the experiment and on the educational and evaluation side--means that the implementation of the experimental goals requires forward planning to release staffing components, to order equipment from overseas suppliers, and to train operators. Such forward planning is difficult in short-term experimental periods. This factor has been of considerable importance throughout 1974.

Tiresa Malietoa, Director of the University of the South Pacific Extension Service. August 1972.

One of the elements of funding in 1974 was assistance from the UNDP/UNESCO Curriculum Development Project, situated on the University Campus and partly integrated into the University's School of Education.

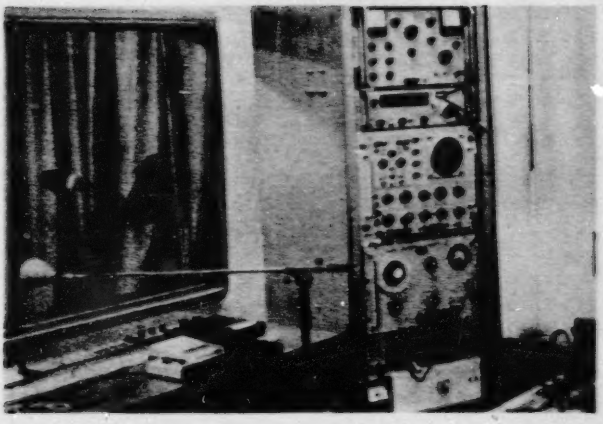
Although the amount of financial aid available from the UNDP/UNESCO Curriculum Development Project was small, within the experimental framework it was significant in that it was tied to terminal equipment. The administrative procedures of UNESCO required that terminal equipment purchased under this funding arrangement be ordered through Paris, and necessary equipment ordered for terminal activation in March 1974 will not be available until March 1975, outside the first year's experimental program.

Evaluation

"How did we ever get along before?" and "Put it on our agenda for the Monday satellite meeting" are typical expressions that indicate the growing acceptance of the system by users.

Of all the experiments, Experiment 3 is clearly the easiest to evaluate since the user attends a research conference, fills out a form, and responds on a basis of how the conference proceeded. Such judgments are, however, affected by the quality of transmission and reception for a particular day, and program evaluation, at this point, is hard to separate from facility evaluation. As with any new system,

USP extension students in Rarotonga participate in a satellite course on Contemporary Education in the Pacific. October 1975.



The Suva, Fiji, satellite terminal, where exchanges originate, also serves as a production studio for the South Pacific Commission Radio Bureau. June 1975.

the emphasis initially is on the hardware. Does it work well? If not, why not? Is the user familiar with the system? How much instruction does a first-time user require? And so on.

Experiment 1

Evaluation involves the number of students beginning courses and the number completing courses. The present implementation of Experiment 1, generally coincided with the implementation of a similar nonsatellite program. That is, students within range of the system were encouraged to use the system. This arrangement was very successful, especially just prior to course examinations. Otherwise, student use varied, but students who were experiencing difficulties were usually on hand for tutor conferences. Initially, this created concern, but later it was found that student participation based on their own priority of needs allowed tutors to give special help to students who were having problems. These findings are currently under review, and an experiment using a control group is scheduled for implementation in mid-1975.

The Land Tenure course, part of Experiment 1, showed the satellite to be a vital link in the completion of the course. The weekly discussion by satellite was used to clarify questions, maintain interest, and motivate students. Evaluation of this course indicates a high level of student participation.

Experiment 2

In Experiment 2, concerned exclusively with curriculum development, the satellite served as a connecting element

with the region outside Fiji, and all workshops revolved in various ways around the satellite. The use by the team continued at an increasing pace as the curriculum projects moved through their various phases of implementation. All users relied heavily on the satellite, and they supported the continued use of the system for their projects.

Experiment 3

The merits of each exchange theme (within Experiment 3) should be considered separately. Because of heightened interest in a specific need, some exchanges are viewed as being major exchanges--that is, a large number of terminals are involved; two or three participants were used per terminal; and the exchange covered several months. Within the region, the research seminar was highly successful. After a few introductory comments, participants, specialists in their fields, began to employ a free-flow of ideas related to their fields of specialization. Generally, the first session established format and agenda. Subsequent sessons discussed agenda topics, and some topics required several sessions. Because of the time involved in preparation, a successful format was to rotate session chairmanship so that one person or region was not continuously burdened with extensive preparation--typing letters, mailing agendas, gathering pertinent data, and so on.

Medical and agricultural usage has predominated to date, but requests in other fields are becoming more prevalent, and an increase in usage is expected in the fields of education, religion, and commmunity agencies. Also, future time requirements will increase within the time limitations imposed by present allocations; this will necessitate careful scheduling and management. One time item of significance is the need for more time per session. While the present 50 to 55 minutes

The King George V and Elaine Bernacchi School, Tarawa, Gilbert Islands, October 1975.

is adequate for the first session, as participants become familiar with each other, the system, and the agenda, and as individual response to items become highly detailed and specialized, agenda items often remain untouched. This is not a case of work/message expanding to fill the allotted time, but rather an expression on the part of participants who move into the research-specialist response--highly trained people discussing topics of mutual research interest.

Experiment 4

Experiment 4 dealt with information exchange--voices, data, facsimile reliability of the systems, and so on. An empirical observation supports two-way voice link as being vital to a developing regional university system. Rapid solutions and responses are necessary to maintain the system, and, after the initiation of the experiment, the message and regional news portions broadened as the experimental period progressed. In a system such as the University's, the location and relative isolation of the University Centres create problems in accomplishing daily procedures and routines. Such problems, troublesome in areas that have access to sophisticated communication systems, become almost overwhelming in a regional university experience.

Staff isolation and communication delays also have detrimental effects. Because of this, staff members began to require and make specific requests for solutions of administrative concerns within the immediacy of the satellite network system. The University Regional Newscast altered from its original concept of presenting news of the region to that of holding a University/staff management meeting on a weekly basis. However, regional news was still presented as a key part of the meeting. In the technical aspects of the experiment, priorities in the installation and maintenance of the system required full staff attention and delayed experiments in areas of duplicating facilities and training manuals.

Conclusion

To a satisfying degree, these experiments have been successful. During the experiment period, the University placed emphasis on external teaching and developed a program that made the satellite network part of an integrated system. The evaluation of the external classroom experiment led to the design of a tutorial program composed of four parts:

1. ancillary support materials such as audio tapes and printed materials;

2. a locally based tutorial assistant to meet with students at each University Centre;

3. specific student-response assignments of a written or research type;

4. the satellite exchange as the major media characteristic.

Of the four components, evaluation showed the satellite experiment to be the vital element in the External Teaching Program. The Land Tenure Courses, developed around the four integrated parts, was highly successful. A summary of the Land Tenure course evaluation indicated that the weekly, hour-long satellite discussion was valuable, not only to clarify questions but also to maintain interest and motivate students. An evaluation of the Land Tenure course by students in Rarotonga gave high priority to the design of the course. The students were "...especially pleased with the satellite discussion in which students in Fiji and Honiara participated: they felt the diverse experiences brought together in this way added immensely to the course."

EXCHANGES IN EDUCATION

First Class-Communication 145 · Diploma in Education · Comparative Pacific Education Credit Course · Environmental Education · Cultural Differences · Cultural Differences (Primary) · Elementary Teacher Training · Issues in Higher Education for Community Colleges · Nursing Education (Patient Interviewing) · Nursing Education (Childbirth) · Mathematics · Correspondence Education · Student Governments · Kindergarten Curriculums · National Education Association · English Language Teaching · Continuing Education · Pacific Affairs High School Forum · Problems in Compulsory School Attendance · Migrant Education · Communication & Future Credit Course · Problems in Elementary Education · Direction of Education · Curriculum Planning & Development

5 SCIENCE NETWORK

The diffusion of technology and its sensible application to existing human conditions is an urgent worldwide requirement. Much is written about the need for cooperation among scientists in their search for new knowledge and for focusing the work of science on pressing human and environmental problems.

Improved communication can contribute to greater cooperation. Several small experiments in global conferencing among scientists and technicians have been attempted using PEACESAT transmissions. The results have been gratifying. It is clear, however, that substantial benefits will require more than the ad hoc arrangements that have been attempted thus far.

Using the PEACESAT approach, a worldwide science network could provide for rapid dissemination of information, coordination of data collection, consultation and conferencing among peers, improved understanding of human and environmental needs, and the sharing of attitudes from which governmental and industrial policy can grow.

"It has been emphasized that if the developing countries continue to rely on traditional, conventional techniques without taking the plunge into new technology, the gap between them and the technologically advanced countries will not close but continue to widen."

UNESCO, "A Guide to Satellite Communication, No. 66," Reports and Papers on Mass Communication, 1972.

NEW ZEALAND
REMOTE SENSING CONFERENCE

The March 1974 New Zealand Conference on Remote Sensing provided an opportunity for some 40 Pacific Basin scientists to directly confer with a panel of scientists at the Goddard Space Flight Center in Greenbelt, Maryland (USA). The Department of Scientific and Industrial Research (N.Z.) requested a link-up with the ERTS (Earth Resources Technology Satellite) program scientists to discuss meterologic and geologic applications of the image data provided by the satellite as it scanned the earth's surface. The satellite exchange reduced lag time in obtaining information on such applications as side looking radar data, snow cover mapping, and marine life tracing.

Participants

HONOLULU: Department of Geography, University of Hawaii

EVERETT A. WINGERT, Associate Professor of Geography; JOHN ROCKE, Research Associate, Geography.

RAROTONGA: Department of Survey, Cook Islands

TONY UTUNGA, Survey Scientist; STUART KINGAN, Scientific Officer, Cook Islands Government.

MARYLAND: Goddard Space Flight Center, Earth Resources Technology Satellite (ERTS) Project

JOHN H. BOECKEL, Assistant Director for Operations Applications Directorate; STANLEY FREDEN, ERTS Project Scientist; NICK SHORT, ERTS Project Geologist; VINCENT SOLOMONSEN, ERTS Project Hydrologist.

WELLINGTON: Physics and Engineering Laboratory, Department of Scientific and Industrial Research (DSIR)

DR. J.C.E. HUBBARD, Botany Division, DSIR, Dunedin; R.J. MUNSTER, Meterologic Office, Ministry of Transport; G. HOWARD, Ministry of Works and Development; ROSS COCHRANE, Geography Department, Auckland University, Auckland; JOHN BROCK, Grasslands Division, DSIR; BOB BARRETT, Department of Lands and Survey; MAIRI CLARK, Head Office, Department of Lands and Survey; R.A. PANNETT, Meterologic Office, Ministry of Transport; P.H. GRESHAM, Commission for the Environment; B. BRUN, Fisheries Management, Ministry of Agriculture and Fisheries; A. KILNER, Fisheries Research Division, Ministry of Agriculture and Fisheries; DAVE

EGGLESTON, Fisheries Research Division, Ministry of Agriculture and Fisheries; GERRY LENSEN, Geologic Survey, DSIR; RON HEALTH, New Zealand Oceanographic Institute, DSIR; JONATHAN COCKS, Crop Research Division, DSIR, Christchurch; J. WHALAN, Information Service, DSIR; W.I. REILLY, Geophysics Division, DSIR; BOB LEE, Soil Bureau, DSIR; JOHN ADAMS, Soil Bureau, DSIR; DON THOMPSON, New Zealand Meterological Office, Ministry of Transport; R.P. SUGGATE, New Zealand Geological Survey, DSIR; P.R. WOOD, New Zealand Geological Survey, DSIR; ROSS STRATFORD, Lincoln University, Canterbury; M.A. COLLINS, Physics and Engineering Labs, Lower Hutt; DR. M.C. PROBINE, Director, Physics and Engineering Labs, Lower Hutt; DR. IAN BAUMGART, Commissioner for Environment; PETER ELLIS, Remote Sensing Section, Physics and Engineering Labs; GEOFF KING, Physics and Engineering Labs; TONY HANLEY, Wellington Polytechnic; STEVE CHAMPION, Wellington Polytechnic; GORDON HELSON, Advisory Services Division, Ministry of Agriculture and Fisheries and President, Wellington Royal Society.

Excerpts from Proceedings

Probine (Wellington): Thank you, John. You are coming in very well indeed. Just before I hand over to the people who want to direct questions to you, I would like to introduce Ian Baumgart, who is the New Zealand Commissioner of the Environment. He is meeting with us here today in Wellington.

Baumgart (Wellington): Thank you, John. I hope the participation is as good as you think it is. We've got about 40 people here at this meeting at the very moment, 39 New Zealanders and one Australian. New Zealand, as you know, has got a pretty good knowledge of its natural resources, its geology, its soil, its hydrology, and so on, and we've a tradition here on that base pretty effectively. We are trying to consciously find out the best way of managing our environment, and so we are very interested to understand and to make the best use we can of this new tool you are providing. This group here today, meeting for the first time, is getting very interested in applying this technique to our own field. I am not going to take up time. I am going to hand back to the technical people who are going to ask you questions. I am sitting here and listening in on the session with very real interest.

Ellis (Wellington): There is one major participant I haven't mentioned, and that's Mike Duggin, of course, from Australia, who particularly wishes to talk to Nick Short, so I'll pass you over now to the first questioner who is Professor Ross Cochrane of Auckland University.

Cochrane (Wellington): Hello, John. Now that New Zealand is, hopefully, ready to participate in analysis of ERTS imagery of our own area, we have several questions we would like to ask, in particular about the practical availability of obtaining ERTS-1 data. Some people in New Zealand have looked with considerable envy at the imagery that's been available for other parts of the world and are now hopeful that we can apply this to a range of problems, and particularly, to general resource inventory of New Zealand. Firstly, I want to ask about ERTS-1 data, the availability of the multispectral imagery, the four band imagery that has been taken recently of New Zealand. What are the sort of procedural steps for obtaining this?

Boeckel (Maryland): There are 11 scenes available of New Zealand with less than 30 percent cloud cover. I believe I've sent Peter the image identification numbers of all those scenes so that he can order them from the ERTS Data Center in Sioux Falls for any scene for which you have the image E.D. However, there will be a very long delay in getting them, because you have to go back into the archives to produce these tapes. They do cost, as I understand it, $40 per tape; a single tape has all four bands but its a swath only 25 miles wide and 100 miles long. Are you copying me well....

Cochrane (Wellington): Thank you. I think that answers the question that I have been concerned with. I'll now turn you over to Peter Ellis.

Ellis (Wellington): Thank you. I have the next questioner here, John. This is Mike McGreevy from the Forest Research Institute, who's interested in forest inventory, and without any more delay I'll pass you over to him.

McGreevy (Wellington): Could you tell me firstly if the return beam Vidicon has been used for forest identification and, if so, in what instance?

Boeckel (Maryland): The return beam Vidicon was used during only the first month after launch and really was employed in no serious investigation. All the forest inventory work has been done with the multispectral scanner.

McGreevy (Wellington): Secondly, how much computer core of storage is required for programs handling digital output, and what is the cost of these programs, and are they available?

Boeckel (Maryland): You've asked us a question that we're having some trouble with here. Typically, programs are run on a machine called PCP 11-45. I'm afraid none of us here know what that means in terms of core storage. The best analysis programs available are at Purdue University in the LARS system.

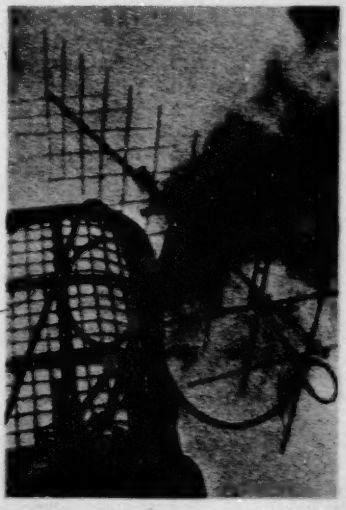
McGreevy (Wellington): Thirdly, could you give me the number of bits of digital information per frame on the digital tapes that are available?

Boeckel (Maryland): It's about 10^7 per band.

McGreevy (Wellington): Thank you very much. I'll turn you over to Peter Ellis again.

Ellis (Wellington): Thank you, Mike. John, while we are on the subject of forestry, I have a question. It's a very quick one for you. Can you tell me the name of the person or people who are interested in spectral signatures of forest types?

Freden (Maryland): This is Stan Freden. There is one gentleman who was with Oregon State University, now with ERTS-SAT Corporation in California, whose name is Chuck Poulton, who has been working rather extensively with the



This view of a shipboard antenna indicates how small ground terminals with light antennas may be used to link scientists and researchers with colleagues even when moving about in remote locations. This antenna provided satellite communication between the University of Hawaii campus and incoming students aboard the U.S.S. President Wilson out of Yokohama. August 1971.

forest inventory in the state of Oregon. There is another gentleman whose name is Heller, who, I believe, is with the Forest Remote Sensing Laboratory, I believe, in Berkeley, California, who also is very familiar with the forestry work that has been going on with ERTS.

Hubbard (Wellington): I would like to know what uses have been made of ERTS data for the study of natural vegetation if one excludes agriculture and forestry.

Boeckel (Maryland): There has been considerable work done on range-land monitoring and range-land mapping--looking at the capability of range land to support grazing activities--and also investigations are underway on trying to determine the total Biomass in range lands.

Hubbard (Wellington): Thank you. Has anything more been done about a world inventory of marshlands?

Boeckel (Maryland): There is also considerable work that has gone on in mapping of wetlands and wetland vegetation species....

Blake (Wellington): Hello, John. A year ago, we prepared a proposal dealing with the New Zealand hydrological network to assess our water resources. In the course of preparing that proposal, one overall concern was that there did not appear to be very much information available on the use of remote sensing via satellite to assess the water resource of any particular country. My first question: we have been endeavoring to map both mean flows and low flows throughout our country, and the problem that arises here is that, OK, you have a number of points at which you measure these flows, and then you have to extrapolate them in most cases, very rugged catchment or watershed area. Now it is of interest to me whether anybody has worked on using a partial area concept, or has anybody tried to relate areas of similar surface moisture to the stream flow measurements at a point for the catchment?

Solomonsen (Maryland): This is Vincent Solomonsen. I'm a hydrologist here in the atmospheric and hydrospheric Applications Division at Goddard. There is some work that's going on wherein they are trying to relate the land use in such a way as to predict low flows and in some cases high flows; however, in the case of low flows, the results have been marginal to poor so far. They haven't been very successful. We're not too sure exactly why that is. Our experience is not complete yet. In another sense, concerning

snow-covered area, we think that the results so far there have been very applicable in terms of measuring snow-covered area and relating it to run off. We here in our own laboratory have some success in doing that in the Wind River mountains in Wyoming. Am I coming close to what you want?

Blake (Wellington): Thank you, Vincent. I guess the reason for a poor result with low flows would be that the source of the river flow is deep below the surface and therefore bears little relation to the surface conditions of the catchment.

Solomonsen (Maryland): Again you are striking an area where we just don't have many results to report on. We do have some indications that you can map superficial features, such as vegetation, and relate that to near surface aquifers and try to locate those aquifers, but still all the results are preliminary enough, or embryonic enough, to not really give any definitive results, in my opinion.

Ellis (Wellington): Peter here. I now have Jonathan Cocks with me here, who is from the Crop Division at Lincoln in the South Island, and he has some questions on crop identification so I'll pass this over to him.

Cocks (Wellington): Hello, John. A feasibility study really is the question. Is it possible to identify crops, bearing in mind that the average size of the crops in New Zealand, or rather the paddock size, is round about the 10 to 15 hectares?

Solomonsen (Maryland): Yes, I would say at anything above a few hectares, or say 10 acres, the crop identification becomes pretty good.

Cocks (Wellington): The other thing is at what stage is the optimum time for sensing these crops and in their state of growth?

Solomonsen (Maryland): I think that's a relative question. If you want to detect crops from other things, just generally crops versus noncrops, of course, the best time to tell is when they have the maximum canopy, when they are fully growing. However, if you want to detect one crop from another, then one has to combine the crop calendar information with the spectral signatures and look at the two in combination for better identification.

Cocks (Wellington): Fine. What would be the percentage of the, say, of a paddock, say 15 to 20 hectares in normal interpretation?

Solomonsen (Maryland): In the Imperial Valley of California, where we have some fairly good experience, our identification is in the order of 90 percent for fields of that size and perhaps higher, perhaps up to 95 percent if one has multiple coverage, that is, two or three different passes at different times.

Cocks (Wellington): OK. At the moment we are trying to identify disease by using the false color infrared. This is reasonably large-scale photography. Do you think this is a good case rather than going on to, say a multiband photography using the standard black and white infrared film?

Ellis (Wellington): Thank you, Jonathan. The next questioner here is Dave Eggleston who is interested in fisheries; he's from Agriculture and Fisheries and is particularly interested in water pollution, surface temperature, and fish migration.

Ellis (Wellington): Thank you, John, and I'd like to thank the people who are with you, Vincent, Nick, and Stanley. It's been terrific here this afternoon; it's almost been like having you in the room.

Feedback

Questions and answers in two-way communication can increase the productivity and social application of research.

Wingert (Honolulu): I've heard rumors to the effect that the tape recorder system on the multispectral scanner here is causing some difficulty....Could you give me any late word on this situation?

Blake (Wellington): My second question concerns the measurement of evaporation, and by evaporation I mean evapotranspiration on a catchment basis....

Eggleston (Wellington): My interest is primarily in oceanographic conditions in relation to fish production and fish distribution....Could you tell me of anyone you know who is using remote sensing data in this field?

"I do not have to labor the value of the link from the point of view of the information which was transferred since you were there in person and can assess that for yourself. What I think is particularly important are the comments of Dr. Duggin from Australia. I felt that since he had been working on ERTS programmes for three years, and was therefore well up with the play, that a lot of the information which was passed would be "old hat" to him and that the session using the link would be of little interest. However, he tells me that the most recent information he has had from Goddard is in a set of abstracts from a conference held last December--and that these abstracts represent the results of work which was concluded at least six months before the abstracts were prepared. In other words, his most recent information is at least 12 months old, and there was, therefore, a lot of information that was passed that was completely new and relevant to his programme.

You can see, therefore, that not only was the link valuable to the newcomers to the ERTS programme; but because of the fact that it was right up to date, it was also of considerable interest to a man who has been working on the ERTS programme in Australia for some time."

Mervine Probine
Director
Physics and Engineering Lab
Department of Scientific
and Industrial Research
New Zealand

EXCHANGES IN ECONOMIC DEVELOPMENT

Agricultural Extension & Research · Carbon-14 Dating Techniques · Ferro-Cement Technology · Fisheries · Noise Control · Oceanography · Urban Planning · Civil Defense--Tsunami Warning Systems · Geothermal Resources & Research · Hotel Operations · Marine Libraries · Nutritional Value of Seaweed · Plant Quarantine · Sea Turtle Research · Solar Energy & Light Absorption · Standards for the Building Industry · Sugar Cane Agronomy · Taro & Tropical Root Crops · Volcanic Soil Research · Sea Bed Law · Ocean Management · Airport Operations · Parks & Reserves · ERTS (Earth Resource Technology Satellite) Application · Population Control · Soil Surveys in the Pacific · Tourism · Role of Technology & Industry in the Pacific · Portable Computer Test

CITIZEN CONFERENCE

These Wellington, New Zealand, citizens are joining with several such groups elsewhere in the Pacific. They are using the PEACESAT system for dialogue with scientists in Honolulu.

In 1974, a NASA-sponsored series of nontechnical lectures were scheduled in seven U.S. cities. At Honolulu, audiences were extended by satellite to other points in the Pacific. PEACESAT provided an opportunity for these participants, not afforded U.S. audiences, to question the experts.

Included were John Pierce, Professor of Electrical Engineering, California Institute of Technology; Joseph Coates, Program Manager, National Science Foundation; and Theodore Schultz, Professor of Economics, University of Chicago. Among the topics discussed were: "The Food Revolution," "World Economy in 2020," and "How to Negotiate with Mother Nature."

Reports were carried in the Pacific press, and PEACESAT proceedings were broadcast by the National Broadcast Commission in Papua New Guinea. July 1974.

6 COMMUNITY NETWORK

Today the established communication systems link the large centers of population. Cables or commercial satellite communications follow trade and the movement of people. Small communities of the world are poorly served or not served at all.

It seems to many observers that the satellite can create neighborhoods out of small communities now separated by water or rugged terrain. A low-cost ground terminal system such as PEACESAT is suited to small nations and rural areas. Where there is a lack of interchange among people today, in the future common approaches to important problems can develop with the addition of communication links. Questions of land policy, water rights, and educational opportunity are common to peoples in areas separated by great distances. One of our objectives in the PEACESAT Project is to determine what kinds of common ground exist within regions? Is it sufficiently recognized by local people so that communication traffic will be generated?

In international circles, the use of the communication satellite to serve regions of the globe and the needs of a number of nations is often discussed. Several major countries are actively planning what may in the next decade become regional satellite services. However, the PEACESAT Project is the only example of regional networking in the world thus far.

In the PEACESAT experiment we think of regional networking as an arrangement serving limited areas within that larger area covered by the satellite beam. For example, where use of the system is international among contiguous nations, we label it as regional. Will regional networking produce substantial communication traffic in the future? At this point we hesitate to answer that question. With experiments of the type reported here, we hope to have evidence in the future on which to make a prediction.

PLANNING LOCAL INVOLVEMENT

A regional network arrangement is currently being tested by small community terminals of the PEACESAT system. The experiment is limited to terminals located in very small nations without metropolitan centers or institutions of tertiary (higher) education. Special emphasis is placed on interaction among non-specialists and among members of indigenous communities.

A small community committee is chaired by Rodney Spooner of Niue. Terminals involved in addition to Niue are in the Cook Islands, New Hebrides, Kingdom of Tonga, Gilbert Islands, British Solomon Islands, and at Saipan in the Trust Territory of the Pacific Island. Some of the potentials and problems of a regional network of small nations are evident from the committee meeting transcript in which practical problems are discussed. Speakers are Teresapii Kingan (Cook Islands), Elias Thomas and George Callison (Trust Territory of the Pacific Islands), Margaret Blundell (Tonga) and Spooner.

The amount of international communication by non-specialists in a society of small villages is very uncertain. Can a basis for communication be developed and will any value come of the exchanges? Inter-island communication today is primarily for economic purposes and almost totally by people associated with industry and the trade structure. However, before the Europeans entered the Pacific, we are told, there was more communication among the island people than there is today.

The use of small terminals provides an opportunity for communication among indigenous sectors of the island populations.

Excerpts from Transmission
August 1975

Spooner (Niue): The first point on the agenda is operating the scheme--looking at possible future difficulties and problems. The second is going briefly through John's letter. The third is planning a strategy for organization in each territory. And the fourth is suggesting the first topic for the small community group exchanges.

Well, I'll start the thing off by perhaps asking you all for any thoughts on operating the scheme. If you can see any difficulties, perhaps we can solve them before they actually become problems. So, I'll start off from here with one or two little difficulties. Now that I've got the ministerial backing on setting up a community group, my task is going to be made much easier.

I do have a problem, in that the hours allowed for PEACESAT transmission, that is 0300-0400, are not very suitable. Now this can't be helped, but I'm mentioning it as one of the problems I can see. We knock off work here at 0300, which is local 4 o'clock. The people who work for the government, and because many people do not have their own transport, they go home into their bush gardens, and get their food for the night. Or they go down the sea and get their food for the night. By asking ordinary people to participate in programs such as we envision, I think, we're asking them to reorganize part of their lives to be able to participate. And it's a very important part of their life--bush gardens and fishing.

Then there is the transport problem coming back into Alofi where this satellite system center is. Many people do not have transport. Some of the distances, although they're not large in metropolitan terms, are large in island terms. And the furthest village would be 12 miles from Alofi. The roads aren't very good, and the people have done a day's work, so they want to get home and relax. Perhaps they might not be too eager to participate. I'm hoping we can overcome those little problems by the sheer interest we can generate in the topics we set out for them. Well, those are just a few little thoughts I've had. I'll pass on to somebody else...

Blundell (Tonga): Yes, I think we share all those, Rod, because this very set time is a great difficulty, and it's not only the actual time, but the time lag, that is important to these people in Nuku'alofa. I mean, we talk rather haughtily about Tongan time, which is often half an hour or more after the set time. So this may be a difficulty.

I feel a bit wrong in a way talking about difficulties in the beginning, but you're quite right, this will help get them out of the way. If we're going for a real sort of grass-roots level of person, I think that translation is going to be tremendously important. Because there are many people who are extremely interesting whose grasp of English and ability to use it, quite apart from what they're going to feel about the hardware, may cause them to decide they're limited. I think this is going to mean we're going to have to start very cautiously and try and get something really good and possibly even tape it, and put the whole thing over the radio to show what

it is like to people out in the country and in the other islands. I'm delighted to have this small community thing beginning. It's something I've wanted for a long time. I think that's all at this stage.

Spooner (Niue): Thank you, Margaret. Yes, I had thought of those problems, too, but I was hoping somebody else would raise them. I think some of those will come into the discussion later on suggestions for the topic. Now for Saipan.

Thomas (Saipan): I do agree with Margaret on the idea of getting it down to the grass-root level. A grass-root level here would not necessarily be a representative of the Trust Territory government. As you know, the terminal is located on Saipan. I think it would be an experience for people here in Saipan to know what's going on in an area like yours down in Tonga. But again there's the problem of translation. Now people here are little bit more familiar with English than people in other districts, so I would say tht the problem of translation, if we were to invite people from Saipan in the local community here, to tape for us, would not be of that magnitude. Over to Rarotonga.

Elias Thomas: "I think it would be an experience for people here in Saipan to know what's going on in an area like yours in Tonga."

Kingan (Rarotonga): Good evening everybody. Yes, Rod, we seem to share the same problems about that time of 0300 here. Not that everybody complains about it, only a few. Some of them complain about transport.

And another suggestion, Rod. I think if we have some of the old people here for legends and chants, the language problem will arise. Unless we get people that can speak English over here, and I'm not too sure how we're going to go about this. I'm sure there will be a great interest

here, with some of the old people. Mind you that older people do know more about legends and chants than the younger ones, but these are now being taught in school--legends and chants--and schoolchildren should be able to do that if we want schoolchildren to participate. I think this is all I can say at the moment.

Spooner (Niue): Thank you, Tereapii. Yes, I realize this problem of the language, which has been brought up by all three terminals that have spoken. I'm not quite sure how we'll overcome this, myself, but I think it's possibly a matter of coordination of interpretation services. I propose selecting something and possibly skirting the issue for a start.

Next thing to move on to, and some of those points that you've raised will come up again through this, is John's letter to us all, the PS 14. I looked through it very, very carefully, and I thought it was first-class material, and I have made some marginal comments which I would like to share with you.

My first reference then is to paragraph 3, page 1. In this paragraph John talks about "Evaluation": some communities have no opportunity to make a judgment about what is good or bad. This is fundamental, this business of evaluation; however, if we try and evaluate the success of any scheme over this sytem, as I've tried to do with one or two exchanges we have originated, I find there's very little to go on objectively. My impressions are purely subjective, based on what people say, the interest they appear to show, and sort of rather intangible things like this. Observable results also in this territory anyhow are rather meager. Possibly the most observable one was the Dengue Session where we saw all our people rushing around spraying in all directions. This is a bit of a problem, as I see it, to evaluate how successful we are, and possibly we should go into this in some future time.

The second point I'd like to comment on is paragraph 3, I'm a wee bit critical about. There is an assumption that more communications in the present is desirable. Now, I have reservations about that, because I don't know how much communication is desirable. To make a value judgment on this requires a far better person than I am and knowing the culture, and I don't know this culture well enough. How much of the communication that goes on is relevant to island needs and small territories in particular? That was my thought on that paragraph.

And the last paragraph on page 2, John mentions "community committees." Well, I've mentioned the paragraphs I've made in my report to him, perhaps at this stage, I'll swing around again, and you can comment on my comments. Saipan...

Thomas (Saipan): Thank you, Rod. I think it is true that it's important to have an evaluation of schemes or projects directed toward the benefit of the community. It is, I think, important to establish a communication link between the experts and the people for whom the project is intended. This communication link can either be direct or indirect.

Now the other point I'd like to comment on. How much communication is relevant and needed for a smaller territory? Now this territory, Trust Territory, as you are well aware of, is primarily ocean area, and very little of it is land area. I think the question of how much communication is needed can be determined by the kind of information that is necessary to be disseminated. And I think this kind of information will have to be very relevant to people's needs. What is it that a community needs to know and why? I think the question of "why" should also be pursued and answers to "why" will have to be found, because for one to react to anything, one has to be personally affected--either inflicted by some pain or brought some satisfaction. Then his attention is received. Rod, I think I'll pass it on to you, and you can comment on that later or right now.

Spooner (Niue): Thank you. Just briefly, to anser from our point of view here. Our people here are independents; they have a strong sense of their own worth and their own identity. They feel very strongly about their Polynesian culture. There are many signs to me that there is a resentment against us as members of the European culture, against our technology, which is destroying some of their ways of life which I regard as very valuable. What we're thinking about for the moment is to continue to see this desire of the Pacific islanders to develop in their own way, to have their own interests and to use the technology of the Europeans in the way they see fit. Your question is very relevant.

Rod Spooner: "How much of the communication that goes on is relevant to island needs?"

Kingan (Rarotonga): I agree with what Elias said in Saipan. As I said before, when we had our management meeting, I am going to ask some of the people from the outer islands, which I consider the remote areas in the Cook Islands, to come along and listen and observe and see what their reactions to this project are. We should achieve something from this end. As Elias said, the community should know what we are trying to get at.

Spooner (Niue): I notice it here too, as people become more familiar, they become more free in suggesting ideas and participating.

Blundell (Tonga): One of the things that came into my mind in this piece of discussion is what it felt like at the first South Pacific Arts Festival in Fiji where, for the first time, people were meeting each other on a cultural levle. These were the real grass-roots people of all over the place and region who for the first time were traveling and taking part in things together and recognizing certain things that they shared with other people, other Melanesians, other Polynesians, and so on. This is where they have the opportunity to be the experts, not the people who are listening from Hawaii and things like this. But for these people from the small places and from the country to be the experts and the people who have got things of value to say on the satellite about what they do well and what they're interested in, about the culture, about their reactions to the other cultures coming in.

Spooner (Niue): Yes, Margaret, right on the button as far as I'm concerned with this local expertise and the value of what they have to say being of value to others too.

Moving on the page 3 of John's letter, we want the local people, not the specialists from the high administrative level. John makes this point very clear.

Well we've got a wee bit on problems, and I must agree with George and Elias that Niue is a rather marginal terminal as far as transmission goes. It makes things not only very difficult for everybody else, it also makes it very difficult for me here. For instance, on Tuesday, we were chairing session and we packed up, and poor old Wellington had to take over in the middle of it. I'll never forget the disgusted look on my outsider's face when we only go halfway through his spiel. These do affect the response of people to the system.

On page 3, John says it will be important that when one community agrees to take part, it doesn't fail to do so. This brings to my mind the amount of pressure we can put on

people to attend. I find this very, very difficult here. I do find this wonderful Polynesian attitude of agreement because I want to please, and then (Tereapii, forgive me for saying these things) you find people won't turn up. Now the question on my mind is did they really want to or was it the pressure I was putting on them? Then there's people's natural hesitation--feelings toward understanding English, of regarding this system as a European toy rather than something vital to their needs. I would be interested in your comments on the amount of pressure we can put on people to attend once they do agree. I's a very touchy one.

Kingan (Rarotonga): Don't apologize for Polynesian time, I'm all with you. I always tell people to come in now before the scheduled time, because they usually turn up an hour after. I'm so used to this sort of thing. You know the Polynesian style as well as I do, so I don't mind your going ahead with it. It is very difficult for me here too. Instead of their saying, "yes, we are coming"--that's all they say but you can't be too sure whether they'll be here; it's a typical Polynesian way of doing things here--you have to keep on them to turn up. Well, with all our sessions we've been having, I ring people up three times. When we finalize the time of the program, I give them a ring the first day and I tell them "let me know if you are coming or not coming because I have to tell the people over the air that you are coming or not." I also tell them "this isn't a Maori thing, this is a Papaa satellite" (a Papaa satellite is not a Maori one) just to convince them to come along not with the Europeans here, but with the local people. So you just fire ahead, Rod.

Spooner (Niue): Tereapii, I knew I would get a Polynesian answer to solve a Polynesian problem. Thanks, you've given me a few leads.

Blundell (Tonga): A lot of Polynesian problems are also Welsh problems. Some of them solve themselves this way. One of the things I feel is that over this business of people, we've got to help them. And this may mean arranging transport and somebody catching them, bringing them back, where this

Margaret Blundell: "We need to get away from selling the hardware to give ample time to people we want to use it."

shows that we really, really want them. I mean if we have three people from one village, a wife, for instance, might go out and fetch them because we are very much aware of the pressures of the things happening in our office. I mentioned how half the thing to make this go well is the quality of being a good host or hostess, and I think this still implies, more than ever, that we need to get away from selling the hardware to sharing of some sweetness and niceness and giving ample time to the people we really care about. I think this is terribly important.

Spooner (Niue): We sort of adopted a different attitude toward this in that we do try and make people stand on their own feet. But if they make a commitment and then break it, well, that's their responsibility and their loss. We don't put a lot of pressure on people. But I'll take your point about the transport. That does solve one of the problems that first came to my mind.

Callison (Saipan): In case anyone is worried, the Polynesian, Welsh, Maori, you name it, it's all the same. Micronesian time is the same problem.

Thomas (Saipan): That is true, Micronesian time. As a matter of fact, when I was in Ponape it was Ponape time. Perhaps one way to beat the time problem is to get the people interested enough--perhaps after the first or second meeting, have them do special assignments, or give them special things to talk about and try to get their commitment so that aside from trying to get them to the terminal, because I have arranged for them to talk to somebody in Niue or in Rarotonga, give them the feeling that they have, in fact, arranged to talk to somebody with whom they are acquainted. The commitment would no longer be between me and this guy who is supposed to talk, but instead between him and somebody in your terminal or other terminal. Now this would probably take some time, but I think that once we get this kind of feeling in people who may be participating in this kind of discussion, then we probably would be better, because it is going to be their commitment to the other in other terminals rather than us trying to get them to the terminal.

In Saipan, we probably can get people who speak fluent English in their middle age with no problem. We also have people from other districts who can also speak English well. So if we're successful, we probably could get people from different backgrounds in Micronesia to take part in this kind of discussion.

Callison (Saipan): I think we'll have to agree that basically people are the same the world over. The big thing that

is going to be important in this, I think, is to (1) provide them with something of interest to talk about and (2) provide them with adequate time to fully discuss whatever the topic may be. And I think this ties in with what Elias was saying, too. People do not want to become involved in something that is not interesting.

Spooner (Niue): Elias, your personal contact commitment, I think that's a terrific idea, too. Perhaps it's probably best now to combine numbers three and four together, with the emphasis on number four.

I fully concur with Margaret. We've got to have something that attracts attention, that can be spread through the media, through the radio, through the local newspaper, somehow. We want something that clearly provides a service.

Blundell (Tonga): More and more, it looks to me as if we need to be doing something for culture, and I'm wondering really whether limiting it to something quite small like swapping chants from the territories would be a good idea.

Callison (Saipan): Margaret has the idea that is to get at something very basic to begin with--such as how you cook, how you take care of the children in the traditional fashion and so on. Something that would be easily understood and easily discussed and also would break the ice.

Thomas (Saipan): Rod, another thing we should be careful about is that after we select a topic for discussion, we should try to get the right people. I guess what I mean is if it is going to be a discussion on fishing and the techniques of fishing, traditional fishing techniques and modern techniques, we don't want to have a farmer here discussing fishing because he may not be that interested.

Kingan (Rarotonga): I suggest that we must have a topic, a very interesting one, to impress participants we are getting to come along and to get them interested in the

Terepii Kingan: "If we have some of the old people here for legends and chants, the language problem will arise."

George Callison: "Provide them with adequate time to fully discuss whatever the topic may be."

first session that we have, to convince them that this is something really very good for them to come and listen to. I agree with the others. One other suggestion I have: what about the type of singing we do, the traditional way of singing. I don't know if your people would be interested.

Spooner (Niue): Singing is of great interest over here. They play a tremendous amount of Polynesian records over our local radio station. This cooking one has possibility. My suggestion is that possibly we start off with the creation legends of each territory involved. There are many similarities and variations. There are the traditional chants associated with it. The actual legend could be read in English for the participants to listen to, because I think English is sort of the "lingua franca" of the Pacific and at a level where the people can understand. Then the chants put across by participants might be taped. If it worked, this could be broadcast almost directly over the air, either to the general or to children's sessions on school radio broadcast, which I know Tonga, and I think Rarotonga, has. We can make a choice of a specific topic, and we've already got four: cooking, fishing, singing, and creation legends.

Blundell (Tonga): I'm going to be a bit difficult here. I think our first subject is so important we should give more discussion over not only what it is, but also how we begin to handle it. The creation legend is a wonderful idea, but I don't think it should come at the beginning because I think we should start with something that is relatively small, and I don't think the cooking is right in this way. I think we need more discussion.

Thomas (Saipan): I think all are important and perhaps we should have a "potential" discussion among participants in various areas. With regard to the creation legend, I think this can be done by just getting the information from books that have already been published, say in Micronesia. But I don't know about the other places. Unless you mean to have it done by somebody who can present it in the traditional way using the traditional or local language. I know that some of these legends have been translated and written and made into books which are available....

TRADITIONAL CHILDBIRTH

In the course of the meetings to plan local involvement, it was decided that the first exchange among nonspecialists would be on "Traditional Childbirth and Child-Rearing Practices Up to Age Two." Excerpts from the PEACESAT transmission are included below.

Excerpts from Transmission August 1975

Rarotonga: First of all, when a baby was born, the child's umbilical cord was cut with a piece of split bamboo. The cut-off part was either burnt or thrown into the sea if the parent wished the child to grow up to become a sea fighter. After this, the navel is tied with a strong cord made of the bark of the bura. The baby will then be wrapped with a piece of cloth made from the bark of the breadfruit tree. This is soft and warm and very good for the purpose. From birth until the weaning period, the child was mostly fed on mother's milk and sometimes coconut milk was used as a supplement. As the baby got stronger, food such as taro mashed with coconut cream formed the main diet of the baby.

The baby was washed in wooden bowls in cold water. After that the baby was rubbed with coconut oil. Sometimes the mother chewed the food for the baby.

Noumea (Wallis Islands representative): For the first-born, the mother gives the name of the baby. After three or four days in the family, the baby is taken to the priest. After that they have a big feast with the family. About this time the grandmother looks after the baby because she does not go to the land anymore but stays home with the child. During the time when the mother stays in the hospital, the family visits her with food.

Saipan: After the baby is born, the women will tie the umbilical cord with coconut husks and leave it there until it falls off by itself. Usually all babies are breast fed, but they do use supplementary food like rice cooked with a bit of sugar and a bit of coconut cream. Most of the time the mother uses cloths from rice sacks for the clothes for the children.

Tonga: As soon as the child is born, the first thing the midwife does is to cut the umbilical cord, and there is a

little ceremony that goes with this. The cord is cut according to what the future of the child is to be. If the parents want the child to be warlike, they cut the cord on a spear or club. If they want him to be a good navigator, they cut it with a bit of a boat. If the child is a girl, the cord is cut on a tapa beater if they wish her to be a skilled tapa maker, or on a piece of shell which was used to make the strips of the pandanas leaves they used for weaving if they wish her to become a skilled weaver. After this is done, a hole is dug in a place that is well considered. This is for the placenta. If they want a well-spaced birth, then it is dug where people walk, and if they wish for an increase of the family, the hole is dug in a secluded corner. A fire is then built in this hole, and when it dies down, the placenta will be put into it. They believe that if the placenta is cold, the baby will be sickly. After the placenta is placed in the hole, it is covered with earth.

After this the baby is wiped with a piece of unpainted white tapa soaked in coconut oil and made from the nice smelly flower of bark or root. The baby is rubbed with oil and placed in soft tapa. The child is fed on roasted coconut, which is chewed by the mother, into a small square and tied in the end of the tapa and put into the baby's mouth to chew. The mother is made to drink a lot of coconut juice, roasted in the umu to keep it warm. This will help the mother to get more milk quickly.

The mother and the baby do not have a bath until five or ten nights later. The baby is breast fed until his teeth start coming; then he should be ready for adult's food. The baby's food includes fish, chickens, and especially opules, these to be found at the end of the tide on the reef. Other foods are yams and particularly ufilei, which are small in size but nice in taste. Sweet potatoes, kumara, are not allowed because this makes the baby have diarrhea. The food that are tabooed to the baby are taboo to the mother while she is breast feeding. These include pork and octopus because they are too salty and fatty.

Niue: Relatives of the man and wife gathered on the day the baby struggled to be born. They stayed with the woman encouraging her to be brave and deliver the baby. Some of the relatives got leaves from the giant taro and held them above their heads and prayed:

"Bear fruit quickly, bear fruit quickly.
Let the child come down. It is not difficult."

If the baby was a boy they cut off his navel, but if they desired the child to be a great toa (hero), they bit the navel off. If the child was a girl, they simply cut the navel off and said these words:

"When you grow up, be strong and always
willing to work."

Then the navel was buried in the ground to assure ownership of the land to the child.

After five nights had passed, they brought candlenuts to the light up the place, bathed the baby, and gave it a name. "Higoa Koukou Tuitui." This is a common name. This tradition is dying out, and the palangi (European) system is widely adopted.

On the eighth day, if the child was a boy, the father went to hunt for kamakama (crab). A leg of the kamakama was broken off and rubbed on the child's leg so that he may run well on the battlefield, be quick in chasing people in war, and be quick in running for his life in time of danger; then the crab was allowed to escape.

After this, the father went out in search of a bird that sang sweetly, usually the heahea (thrush). When he caught one, he rubbed its beak on the mouth of the child so when he grows up he will speak well, be wise in prayer, avoid stones and spears in battle, be able to bear hardships, be kind, and live long. Then the bird was allowed to escape.

There was very little recognition for girls, as they thought that girls were not as important as boys. Therefore, at the time of battle, girls were killed instantly at birth, and boys were kept. Some parents wanted to keep girls. But unfortunately if they cried too much they had to be killed.

The mother usually chewed the food before giving it to the child. The traditional way was horrible to think of it today; however, the children grew up as good and even stronger than children today.

EXCHANGES FOR BETTER COMMUNITIES

American Field Service · Boy Scout Jamboree of the Air · Fire Services · Maori Pre-employment Training · Parent-Teacher Association · Municipal Government Services & Problems · Chaplains & Counseling · Personnel Management · Micronesia Future Status Talk · Pacific Poets · Education for Self Government · State Foundation on Culture & the Arts · Earth 2020 · Carnegie Corporation "Needs in Pacific" · Juvenile Counseling · Rotary · Museums in the Pacific · Church Youth Group · Girl Guides · International Women's Year · Archives of Pacific Music

MICRONESIAN CONSTITUTIONAL CONVENTION

Floyd Takeuchi
East-West Center Grantee
from Saipan

Under the Trusteeship Council of the United Nations, the United States and its Department of Interior administers the Trust Territory of the Pacific Islands (TTPI), sometimes referred to as Micronesia. The citizens of this area, which is larger than the contiguous United States, have been engaged in determining their future for a decade. In 1975 a Constitutional Convention (Con-Con) has been in session at Saipan, the TTPI headquarters.

In this experimental PEACESAT activity, Micronesian students at the University of Hawaii carried on a hard hitting question-answer session with delegates to the Conference. Pictures from the PEACESAT terminals at Honolulu and Saipan supplement the report on the session prepared by Floyd Takeuchi, a Micronesian student. The session was chaired by Toshi Rudolph (Ponape).

The political importance of the system which allowed for 1½ hours of dialogue among officials and a very important constituency is clearly demonstrated in this activity.

The Trust Territory of the Pacific Islands is made up of hundreds of small islands separated by water. None of the locations can afford conventional communications by cable or Comsat satellite systems. The PEACESAT approach is the only way in which effective education and health can be brought to most locations in this vast and important part of the world.

Participants

SAIPAN: Larry Cabrera (N. Marianas), Luke Tman (Yap), Hans Williander (Truk), Hirosi Ismael (Ponape).
HONOLULU: Elizabeth Rechebei (N. Marianas), Hilda Heine (Marshall Is.), Alfred Capelle (Marshall Is.), Raphel Defeg (Yap), V. Nancy Wong (Palau), Mario Andres (Palau), Masao M. Ueda (Palau), Dr. Burton Jano (Ponape), Toshi Rudolph (Ponape), Abram S. Ichin (Truk).

Transmission Report
October 31, 1975

The PEACESAT Project set another first when Micronesian students in Hawaii questioned four elected representatives to the recently concluded Micronesian Constitutional Convention. The conference, which brought together the Honolulu and Saipan terminals for an hour and a half, was the first time PEACESAT has been used to allow constituents in one part of the Pacific to question their elected representatives on an issue of paramount importance.

The conference, held on October 31, 1975, was a part of a series of events Micronesians in Hawaii organized to help celebrate Micronesia Day (October 24). The students, from the East-West Center, the University of Hawaii, and other colleges, used the satellite system to keep themselves informed about the latest Constitutional Convention.

Toshi Rudolph, the student moderator from Ponape, said that the discussion also gave them a chance to let their delegates know what issues students in Hawaii are concerned about. "We let them know by our questions," Rudolph said, "what areas we believe are important to our future."

Some of the issues of concern were the source of national revenue for an independent Micronesia, the issue of eminent domain, secession, the structure of the executive and the role of traditional leaders in it, the extent of tourism development, and the future role of the U.S. military in Micronesia.

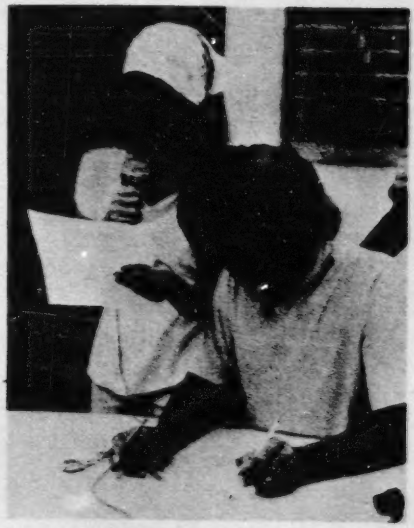
Considering given the limitations imposed by time and the structured format, the PEACESAT Conference was highly successful, although, for the few non-Micronisians at the discussion, the answers at times seemed vague and rather noncommittal and there was a tendency to blame this on the representatives being "politicians."

There was more to most of the answers than there appeared to be. Hans Williander, for example, a delegate from Truk, answered the question of U.S. military activities in an independent Micronesia by saying, "I think that question is very short but very hard. As a delegate, I think it is premature for me to answer; but as a Micronesian, I think that if the Micronesian people wish to have an independent status, they can do it with or without the presence of U.S. military in Micronesia."

The PEACESAT Conference did more than inform Micronesians in Hawaii about the latest developments at the Constitutional Convention; it served as a catalyst to bring together Micronesian students by putting them in the po-

Micronesian students Raphel Defez (Yap) and Elizabeth Dias Rechebei (N. Marianas) confer in Honolulu following remarks by a Convention Delegate in Saipan. October 1975. ▼

Alfred Capelle and Hilda Heine (Marshall Islands).



Toshi Rudolph (Ponape) and Miriam Dela Rosa (Truk). ▲

Constitutional Convention Delegates use Saipan terminal to talk to their constituents in Hawaii. Seated (L to R) are Hans Williander (Truk), Lorenzo Cabrera (N. Marianas), Luke Tman (Truk), and Hirosi Ismael (Ponape). Standing in background are Strik Yoma, Convention Delegate and Director of Public Affiars; Paulino Pablo; News Producer WSZD, and Elias Thomas, Chief Broadcast Division, Trust Territory of the Pacific Islands. October 1975.

sition of having to ask themselves and each other what their future status should be.

This was clear when the student participants met the evening before the Conference to organize the agenda to get the most out of the time given.

The students discussed for four hours, at times arguing a wide range of issues. Working from an outline, they at first came up with almost thirty questions but later had to decide on ten from that list.

Each time a question was raised, it was inevitably answered by one or two representatives present and then a full-scale discussion began. This process was repeated for almost all of the questions raised.

An important result of the PEACESAT conference is the possible development of a new Micronesian student organization. In the past, similar groups served to bring together most of the Micronesian leaders who now serve in the Congress of Micronesia as well as the Constitutional Convention.

This seemingly small development may hold large and far-reaching consequences for the future of Micronesia. For those familiar with the Micronesian political scene, the possibility of Micronesian unity has become precarious by the move made by the Marianas to become a U.S. Commonwealth and by the threatened walkout by other district groups.

By joining together now, the second generation of leaders may be able to strengthen the bonds of unity. Luke Tman, a Constitutional Convention delegate from Yap, highlighted the feelings of many of the students in the Honolulu PEACESAT studio when he said, "There is no such thing as disunity in my mind. We do have differences, but that does not mean we are not united. The unity of Micronesia is a viable concept...it can survive, it can live, if we agree to be united. The question is whether we want to unite now or not."

An audience of Micronesians observe the Honolulu action.

7 LIBRARY NETWORK

To sustain effective professional services anywhere, good library resources are needed. Several types of library networks in the Pacific Basin and world-wide would provide real social returns, in our opinion.

Consideration has been given to the interconnection of legislative reference bureaus to give emerging nations information of approaches to lawmaking. Political and economic leadership can then be aware of experiences in public policy elsewhere and avoid, when possible, the mistakes of the past.

The interconnection of public, academic, and special libraries for interlibrary loan means that collections can be effectively enlarged without the costs accompanying acquisition and storage of materials. Medical library exchange is an important type of special library.

The PEACESAT system is particularly suited to library networking. During the first year, successful experiments were carried out between two University of Hawaii libraries separated by 200 miles of water.

A plan has been developed in which the system will be used for interlibrary loan requests with response by facsimile or by airmailed microfiche. Library traffic is not so great as to sustain an independent, long-distance transmission system and would require small terminals at the libraries in many instances.

PEACESAT PACIFIC LIBRARY CONFERENCE
MAY 15, 1973

Topic: Library Exchange

Problems of international cooperation was the subject of several satellite exchanges among Pacific libraries in April and May 1973. Staff representing 12 Pacific libraries, some separated by as much as 3000 miles, discussed possible new procedures for interlibrary loans and exchange of scientific journals and other special collections in which satellite communication could expedite service.

It is evident from these conferences that professional librarians are ready to experiment in international library networking. We have included a transcribed excerpt from a PEACESAT meeting involving library personnel of the Pacific Basin.

Participants

Hawaii

Rene Huyem, Pacific and Hawaiian Collection, Sinclair Library
Rita Kane, Science and Technical Reference Section, Hamilton Library
Robert Stevens, Dean, Graduate School of Library Studies
Ellen Chapman, Interlibrary Loan Librarian
Sumiye Konishima, East-West Center Communications Institute
Mildred Council, Head Librarian, Maui Community College
Diana Chang, Humanities Reference Section Hamilton Library
De Etta Wilson, Windward Community College
James McMahon, PEACESAT Systems Coordinator

Fiji

Enita Smith, Cataloguing, University of the South Pacific Library
Alyce Pike, Reader Services, University of the South Pacific Library
Mary Mills, University of the South Pacific Library
Mr. Bashor, Pacific Collection, University of the South Pacific Library
Keith Donaldson, Senior Assistant Librarian, University of the South Pacific Library
Alan Cutting, Terminal Manager

New Zealand

Lindsay Mills, Department of Scientific and Industrial Research Center Library
Joan Mooreland, General Assembly Library
Judy Hornerbrook, New Zealand National Archives Library
Miss Thompson, Department of Health Library
Jane Cord, Wellington Polytechnic Library
Anthony Hanley, Terminal Manager

New Guinea

Hans Possin, Institute Librarian, Papua New Guinea Institute of Technology

Saipan

Dan Peacock, Head, Library Services, Trust Territory of the Pacific Islands

Excerpts from Transmission

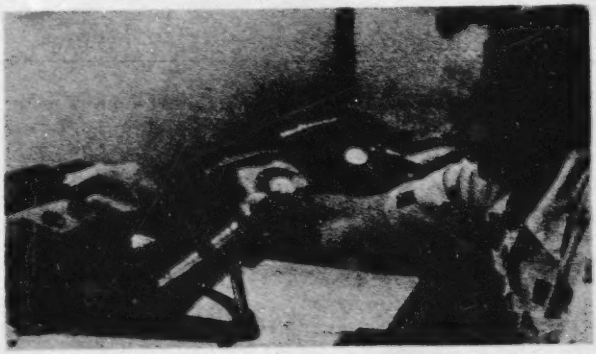
McMahon (Hawaii): One thing that was discussed in the last go around was the possibility of exchanges. At least three different categories of materials were mentioned as possibilities. One was student publications which was brought up by New Zealand, another was University publications, and a third was Medical publications by local medical associations. Since we have begun the session, we have added two people to our participants here at Manoa. And I'd like to introduce them. The first is Miss Sumiye Konishima who is with the East-West Center Communications Institute and the second is Diana Chang who is head of the Humanities Reference Section at Hamilton Library. I will ask Miss Konishima for comments on publications that the East-West Center might be able to provide on an exchange basis.

Konishima (Hawaii): Well, I don't know whether you know what the organization of the East-West Center is, but we do have five institutes and each of the institutes has its own publications program. Publications are available on exchange with other institutions throughout Asia and the Pacific. But the Communication Institute, in addition to its own publications program, collects material on various aspects of communications in development programs and what we call fugitive type materials--that is, materials that do not come through ordinary publishing channels, consisting of research reports, conference papers, consultants' reports, case studies, reprints from journal articles, and disser-

tations. And another category of material is what we call campaign AV type materials, which we have been placing on either filmstrips or slides. We do provide copies of these documents to people who can offer us an exchange of materials we'd be interested in related to communications or at cost, and we are interested in getting as wide a range of geographic areas, as far as Asian Pacific is concerned, represented in our collection. That's about all I have to say about exchange.

Donaldson (Fiji): On the medical journal, as a matter of fact, we can tell you that the Fiji School of Medicine has, this week, issued its first issue of a new journal. And on the question of loaning materials and copying it, we can tell you that last week we at last got our Xerox copier installed, which should be a big help to us. We're starting on our own periodical holdings, and we then hope to extend it to other libraries in Fiji. We hope to distribute this, and of course, we'd like other peoples' periodical lists.

Mooreland (New Zealand): Well, on the subject of exchanges the General Assembly Library does have extensive exchange arrangements for parliamentary materials from several countries (United States, Canada, and Australia) and also some of the international bodies. We are a depository library for many of their publications. But probably not in the particular fields that you mentioned--student publications, one that was mentioned from New Zealand; but university publications and medical publications--I can't really speak about that. But from the point of view of parliamentary exchange programs, we'd be very interested in that. There are some topics that I have here that may not, perhaps, be in line with this program, but I would like to mention them. One is the need that we feel in the Parliamentary Library to be able to get into direct contact with an opposite number in another legislative library. Perhaps sometimes we can't answer a question adequately on another



Daniel Peacock, Supervisor of Library Services, Trust Territory, discusses special collections with library personnel in Honolulu, May 1973.

country's legislative procedures. Rather than go to the local embassy, it would be very much more helpful if we could contact, through TELEX, an opposite number in the appropriate legislature. Another point that I have here concerns resources--the possibility of having a register of libraries with special collections in the Pacific area.

Thompson (New Zealand): Well, I can tell you that the Health Department Library has, at the moment, a rather haphazard system of exchange, but we'd certainly be interested in exchanging any of our departmental materials with anyone who would be interested in receiving it. Now this new journal, that's starting out at the Fiji School of Medicine, we'd certainly be interested in receiving an issue of it as a sample, and I think we would be interested in receiving a copy because this is an issue of interest which we are hoping to expand.

Mills (New Zealand): The DSIR Center Library would certainly be interested in exchanges from other parts of the Pacific. We do have a fairly large exchange program running at the moment where we send out our publications from the Department of Scientific and Industrial Research to various parts of the world in exchange for their publications. The Scientific and Industrial Research puts out journals, such as the New Zealand Journal of Geology and Geophysics and the Journal of Agriculture and Agricultural Research. In addition to publications put out by the DSIR, the divisions, and there are approximately 22 DSIR divisions, put out their own publications and have their own exchange programs running. So certainly within the system there's quite a bit of scope for exchange with various parts of the Pacific.

Hornerbrook (New Zealand): As far as National Archives is concerned, we're always most interested to hear of work in archives in other parts of the world and of holdings with New Zealand and Pacific interest. We have a certain amount, as a Pacific country, of general Pacific interest here, and we're always interested to know where this can be supplemented elsewhere.

Cord (New Zealand): I work with Wellington Polytechnic. I'm interested in this talk of exchanges but wonder does it include exchanges of materials that are no longer wanted apart from serials because it's just possible that some New Zealand Libraries are discarding materials that could be useful to libraries in the Pacific?

Possin (New Guinea): As far as the exchange program is concerned, we have no formal agreement with any library. When we feel something is relevant, we send it out, such as student publications. The only thing I would like to say on the question of exchange is that it may be possible to set up or appoint someone to investigate in depth the possible organization of library coordination and cooperation

in this area. As far as the Institute is concerned, while I cannot commit it to any definite sum, I feel no hesitation saying that we ought to make or would make up to $3,000 or $4,000 available to get such a project off the ground.

Council (Hawaii): This is Mildred Council from Maui, and I'm listening with great interest to all the comments each of you have had to do with this program because in just a little while I'll be in American Samoa and I have been thinking of this business of cooperating with each other and communication with each other because since I've been on Maui, I've had so much cooperation from the Manoa campus. We have the telephone lines, we have air cargo, we have films, we have interlibrary loans that have been so satisfactory and I'm counting on each of you to help me when I need that kind of service when I get to American Samoa to be the head librarian of library services there July the first.

McMahon (Hawaii): Thank you, Maui. Rather than respond to each item to come up I think what we might do is save the last 15-20 minutes for sort of a go around on that; and what I'd like to do is pass on to interlibrary loans and start by asking Ellen Chapman of the University of Hawaii to speak.

Chapman (Hawaii): This is Ellen Chapman. We would be very happy to lend any materials that we can. The unfortunate thing is it will probably cost a lot of money. We charge 10¢ a page for Xeroxing articles, for instance, since our journals do not circulate. The regular mailing time for books might be too long for anyone to want to wait for them; it takes about a month or so, on a slow boat across the Pacific. Any airmail charges would have to be borne by the borrowing library. Other than that, we would be glad to lend just about anything.

Representatives of the Graduate School of Library Studies, University of Hawaii, participate in an international conference on library networking. Dean Robert Stevens (far right). May 1973.

Pike (Fiji): This is Alyce Pike, and I'm the reader's service librarian in charge of interlibrary loans. As Keith has just told you, we have recently installed a Xerox machine. The policy for Xerox copies has not yet been finalized; what we are charging our own people is 5¢ a page. Whether we follow the New Zealand example of the first 20 pages for free, it just hasn't been decided.

Mills (New Zealand): As far as interlibrary loans go, we do have the biological abstracts cumulation; we have a lot of scientific abstracts. So we would be quite happy to do a little searching for things you send in where the data may perhaps not be quite accurate. We have a fairly large collection of journals, particularly when you count the central library collection and the collection from the divisions. And we would copy journal articles for free, certainly up to 20 pages or so. We don't necessarily cut it off at 20 pages; I think again, we will have to stick to photocopies. And we would be happy to photocopy sections from books for you. That's about all.

Hanley (New Zealand): I think that sums up New Zealand's institutions. I think all libraries provide similar service on requests.

Huyem (Hawaii): We have an excellent Hawaiian Collection and a fairly good Pacific Collection. We have several duplicates in both collections; we are willing to share whenever needed. We have a printed catalogue for the Hawaiian Collection and none for the Pacific. We have a printout for the Hawaiian-Pacific Collection Journals. As for interlibrary loans, it's the same condition as indicated by Ms. Chapman. Only if these books are there, they cannot go out. We prefer to make microfilms of rare materials than to decrease the library. We are interested in getting government documents from the islands, which are extremely difficult to obtain through official channels, and exchange them for things needed in the Pacific libraries.

McMahon (Hawaii): Rita Kane who heads up the Science and Technical reference section here at the University will speak on possible cooperative efforts in her area.

Kane (Hawaii): I will talk of the potential facsimile transmission might have. The thing we thought would be possible would be to Xerox contents pages for some journals that a library doesn't subscribe to, send them out over the system, and you could either use them for a reference or you could possibly use it as a sample of what kinds of contents a journal has. We have about 5,000 scientific and technical journals in our own collection. And then, because we have the Health Information Network in the Pacific, we have access to journals in all the other medical libraries in Hawaii.

8 NATIONAL NETWORK

Communications are essential for building and holding a nation together. Papua New Guinea, which became independent September 1975, faces almost insurmountable environmental barriers to effective communication in their dense jungles and high mountains.

The country does not have large amounts of money or trained personnel. Yet, the development of community services--such as law enforcement, a national education system, and basic health services--is fundamental to the growth of the new nation. In addition, economic development in a country rich with national resources calls for flexible two-way communication.

Conventional methods of open wire lines and coaxial cable are impractical. The progressive Papua New Guinea Post and Telegraph has one of the newest and finest systems of micro-

University of Technology (Papua New Guinea) students load the terminal in the lakatoi (canoe) for transport to the coastal village of Labu. August 1975.

wave anywhere. But because of cost and terrain, services must be limited to the more densely populated and economically active areas of the country.

We believe the PEACESAT approach with emphasis on two-way communication, flexibility, and low cost can prove helpful in extending social services into remote areas.

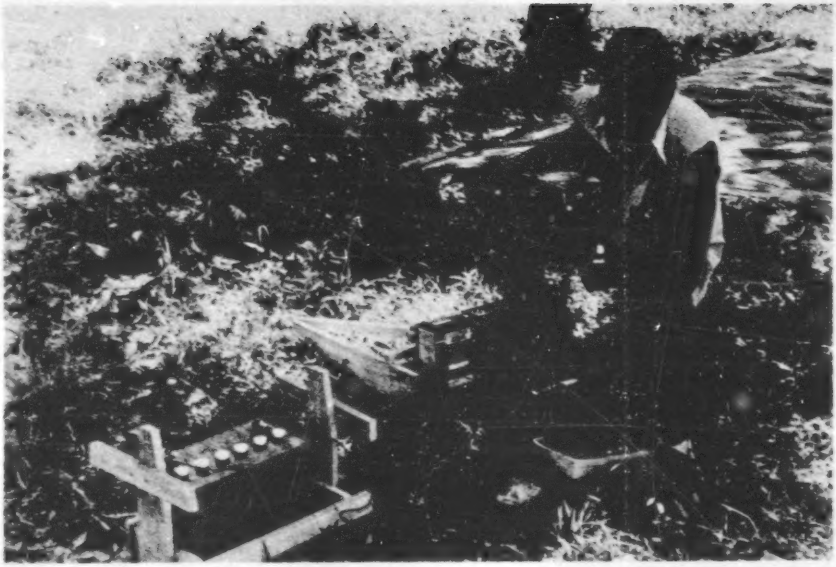
These pictures show the assembly of a small, low-cost satellite terminal at Labu Village and Taraka Village in Papua New Guinea. They represent a promising application of the PEACESAT approach to national development. Small terminals in remote villages, health, education, and government centers, or industrial sites can provide two-way communication with administrative centers or with other locations.

Conferences within regions are possible, and with the addition of peripheral equipment, teletype, facsimile, and other media would be available for use.

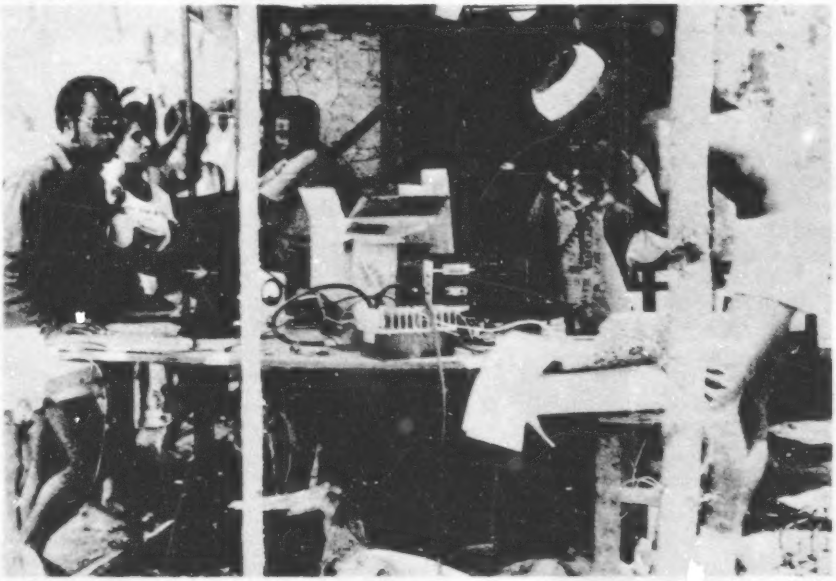
In this pioneering effort, David Muap, a fifth-year student in the Department of Electrical Engineering, University of Technology, Papua New Guinea, prepared a small ground terminal, transported it to a village site, set it up, and carried on two-way communication. Under the direction of Dr. E.S. Seumahu and assisted by Ian Fletcher, the VICSAT Project (Village Communication Satellite Project) carried on transmission tests successfully with Honolulu, Hawaii and Wellington, New Zealand in August 1975.

Mr. Muap concluded his final report, "It is possible to design and operate a portable satellite ground terminal in the VHF band suitable for use in a Papua New Guinea village situation...it appears that it is the only alternative for cheap communications and for educational purposes in rural Papua New Guinea. Social, economic, and political consequences also need evaluation if satellite ground stations are introduced."

We are fortunate that Papua New Guinea has chosen to participate in the PEACESAT Project. Its problems are those of much of the underdeveloped world and among the most severe. Activities such as the VICSAT project can provide an important message to nations now considering investment in high-cost satellite systems for the purpose of nation building.



David Muap, senior engineering student, prepares for tests in the village of Taraka. Six miles from the coast, the location is shrouded with evergreen forests and provided an opportunity to assess technical performance in this environment. August 1975.



9 OTHER NETWORKS

Two proposals for which preparations are being made suggest the wide range of social benefits obtainable with the flexible satellite communication system used in the PEACESAT Project.

SAMOAN CHIEFS NETWORK

Today the Samoan population has spread to many of the great cities of the world. In addition to Western Samoa and American Samoa, major groups are located in San Francisco, Los Angeles, and San Diego in California, and Honolulu, Hawaii. In New Zealand, it is Auckland, Wellington, and Christchurch.

Adjustment to the new urban setting creates many problems for Samoans. It has been proposed that the Samoan leaders in these centers confer together by satellite on common problems. The purpose would be to reduce social conflict and increase opportunity for individual development.

Such a network is not feasible with existing facilities. New terminals would be needed in California, Western Samoa, and American Samoa. Actions are being taken at all three locations, however, to activate terminals. When this occurs it would be technically possible to test this international problem-solving activity.

GLOBAL SCIENCE NETWORK

Interest has been expressed by the Royal Society of London in cooperating with the PEACESAT Project in an experiment in global scientific conferencing. A plan prepared by Anthony Hanley was proposed at a meeting of the Royal Society in September 1974.

The Royal Society of London, initiators of Captain James Cook's explorations in the Pacific, would hold joint meetings with the New Zealand Royal Society and other Pacific Scientific Organizations, to determine the effectiveness of worldwide scientific meetings using satellite conferencing procedures. Two satellites of the National Aeronautics and Space Administration would be used: the ATS-1 satellite over the Pacific and the ATS-3 over the Atlantic. Signals to and from London would be relayed via ATS-3 to a ground terminal at the NASA Goddard Space Center, from there to ATS-1 which would be the relay for PEACESAT terminals in the Pacific.

Such an experimental activity would point to the present feasibility of scientists in major centers linking with colleagues in the field, near data, or at points where application had worthwhile social consequences.

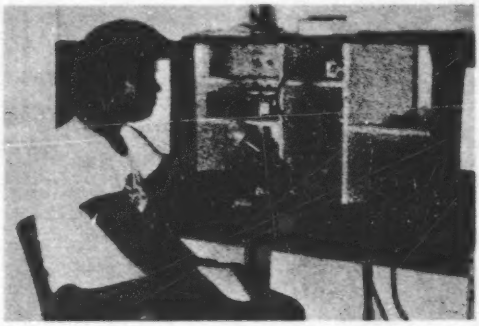
"On the subject of collaberation, the Royal Society would like to start talks resulting out of the offer...that we might consider taking part in the PEACESAT Project in order to try out the effect of a two-link connection to the Pacific and I am simply giving notice to Dr. Bystrom that we would certainly like to follow up that very interesting suggestion."

Sir James Lighthill F.B.S.
Royal Society of London
Chairman's Closing Remarks
Discussion on Satellites
and Educational Systems
October 7, 1975

10 NETWORK OPERATIONS

The use of local, nontechnical persons to operate the terminals is a specification being tested in the PEACESAT experiment. This helps to reduce high costs associated with bringing in outside personnel and can encourage better community participation. Pictured here are some of the systems operation personnel.

It is the operator's responsibility to maintain open channels and to assure correctness and clarity of communication. In some smaller institutions, operators perform the function of the terminal manager. We believe the experiment shows that carefully selected nontechnical persons can perform effectively in the role of the operator when backed by appropriate technical management and uniform system-wide support.



Temaroiti Rameti, Tarawa, Gilbert Islands.

Mostyn Habu, Honiara, British Solomon Islands.

'Anau Fanua, Kingdom of Tonga.

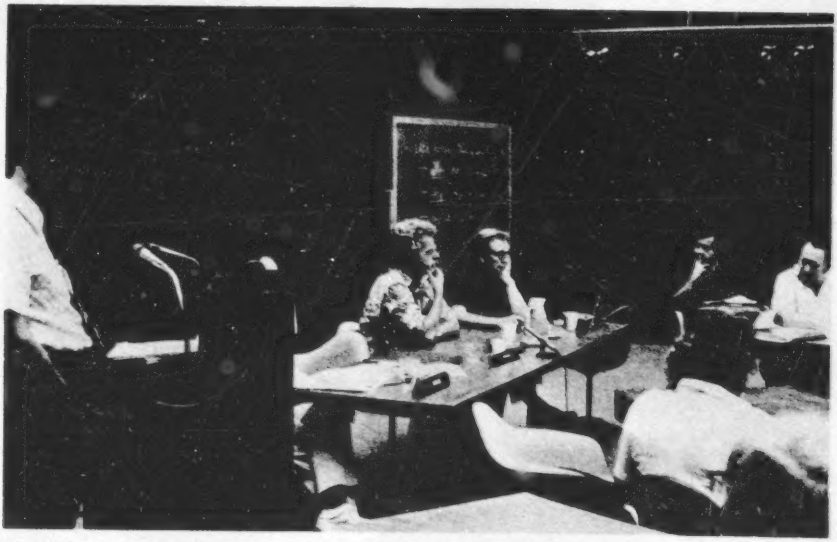
Honolulu Operators Gary Viveiros (left) and Calvin Hirai (right) with Project Director John Bystrom and Engineer Donald Nakano. August 1975.

PEACESAT USERS CONFERENCE

The East-West Center called a "Conference of PEACESAT Users" on April 1975 to review four years of the PEACESAT experiment. Invited were (1) Pacific Basin leaders in education, media, and social services, (2) local managers of PEACESAT terminals, and (3) specialists in satellite communication. Users of the system reported on experiments on the PEACESAT system in which satellite communication was used in support of education, agriculture, public health and medicine, news and public affairs, and regional or community development.

Participants at the Conference spent three days in sessions. Among those shown are:
TOM KENNEDY, Inspector, N.Z. Department of Education; FALENAOTI TIRESA MALIETOA, Director, Extension Services, University of the South Pacific, Fiji; ELIAS THOMAS, Director, Broadcast Department, Trust Territory; MIRA SZASZ, Deputy Chairman, Radio New Zealand; STUART KINGAN, Scientific Officer, Cook Islands; L.S. HARMS, Professor of Communication, University of Hawaii; E.K. FISK, Director, Center for Development Studies, Australian National University; SIR CHARLES MOSES, Secretary General, Asian Broadcast Union, Australia; A. HANLEY, Senior Tutor, Wellington Polytechnic, New Zealand; IAN HONEYMAN, Planning Officer, University of the South Pacific, Fiji; LLOYD SOMMERLAD, Satellite Communications Specialist, UNESCO, France; LEOTA PITA ALAILAMA, Chairman, Pacific Island News Association, Western Samoa; MEG WHITE, Program Officer, East-West Center, Hawaii; TAMATI REEDY, Inspector, New Zealand Department of Education; OVIA TOUA, Deputy Chairman, National Broadcast Commission, Papua New Guinea; SAEU SCANLAN, Dean of Student Services, Community College of American Samoa; PALAUNI TUIASOSOPO, Assistant to the Governor, American Samoa; JAMES RICHSTAD, Research Associate, East-West Center, Hawaii.

John Bystrom, Project Director, stresses the importance of PEACESAT system specifications--such as low cost, locally owned, two-way terminals--to social development and international diffusion of knowledge.



Reading left to right are Wilbur Schramm, then Director, Communication Institute, E-W Center, and a leading communication scholar; John Bystrom, Director, PEACESAT Project; Alex Lee, Visiting Lecturer, San Diego State University, and head of a U.S. Public Service Satellite Consortium; James Richstad, Research Associate, E-W Center, and Director of the Conference, Daniel Lerner, Professor of Sociology, Massachusetts Institute of Technology, and Visiting Scholar, E-W Center.

CREDITS

Publication prepared at the University of Hawaii, Honolulu. Special Assistance by James Holderness, Station Editor, Hawaii Agricultural Experiment Station. Editing and layout by Cynthia Garver, Wake Fujioka, and Jan Uesato. Artwork by Suzanne Bowen, Angelina Lo. Typing by Grace Abe, Carol Jane Maeda, Rosinda Sagucio. Production Management by Carol Misko. John Bystrom, Project Director, is responsible for the condensation of reports and for all other statements and factual material.
PEACESAT Project. December 1975.

PROJECT CHRONOLOGY

1969	Project discussed with NASA. Planning began and inquiries sent to Pacific universities from Hawaii.
1970	NASA approved use of the ATS-1 satellite.
1971	Pilot terminals established at Hilo and Honolulu in Hawaii with State and University funds. Early experiments included first class for credit and first library network by satellite. Wellington Polytechnic (N.Z.) and Hawaii started the first international educational network by satellite.
1972	Terminals activated at Suva, Fiji; Nuku'alofa, Kingdom of Tonga; Pago Pago, American Samoa; Lae, Papua New Guinea; and Maui, Hawaii. Experiments in regional and international networking began.
1973	Terminal activated at Saipan, Trust Territory of the Pacific Islands. International Consortium of educational institutions established for development of satellite communications. University of the South Pacific began Regional Education Network Experiment.
1974	Terminals activated at Island of Niue; Honiara, British Solomons; and Tarawa, Gilbert Islands, by the University of the South Pacific; Port Moresby, Papua New Guinea; and Noumea, New Caledonia. South Pacific Commission began Regional News Experiment.
1975	Terminal activated at Port Vila, New Hebrides.

STAFF

Terminal Staffs: MOSTYN HABU, Solomon Islands . STEVE SEUMAHU, IAN FLETCHER, COLEMAN MONI, Papua New Guinea . RODNEY SPOONER, ALOFA TAFATU, Niue . PAT MAHONY, New Caledonia . ROSLYNE PEDRO, New Hebrides . STUART KINGAN, TEREAPII KINGAN, Cook Islands . GEORGE CALLISON, ELIAS THOMAS, Trust Territory . GILDA BENSTEAD, DICK NORTHCOTT, Fiji . TEMAROITI RAMETI, Gilbert Islands . ANTHONY HANLEY, ELSA FLAVELL, New Zealand . KAVEINGA HAVEA, 'ANAU FANUA, Tonga . CAROL MISKO, WALTER OUYE, KATASHI NOSE, Hawaii.

Project Direction: JOHN BYSTROM, Director, Honolulu, Hawaii . ANTHONY HANLEY, Associate Director, Wellington, New Zealand . PAUL YUEN, Technical Director, Honolulu, Hawaii.

Four types of ground terminals to meet special social requirements·PEACESAT Service System·

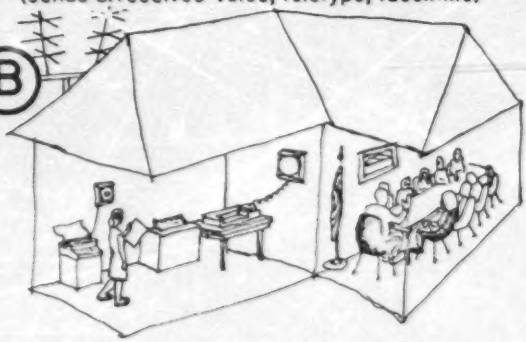
A

PORTABLE TERMINAL (light weight, sends & receives)

FOR: Research Teams, Regional Inspectors, Patrol Officers, Medical Personnel

B

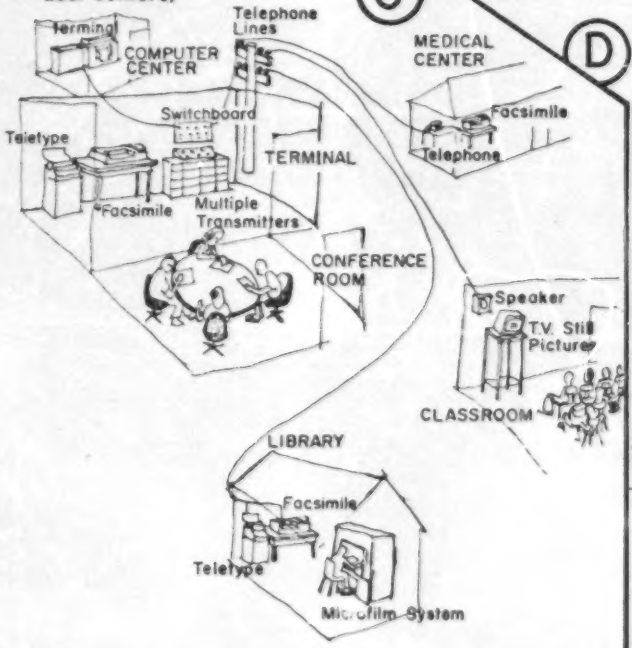
STANDARD TERMINAL, Permanently Housed (sends & receives voice, teletype, facsimile)



FOR: Small Institutions, Medical Centers, Schools, Community Service

C

FULL UTILITY TERMINAL (terminal interconnected with user centers)



D

RECEIVE ONLY TERMINAL (small size, low cost-$100. U.S.)

FOR: Students, News, Remote Personnel